Bristol-Myers Squibb Manufacturing Company

Building 5 Area
Interim Corrective Measure

Phase 1 Implementation Report

FINAL

Bristol-Myers Squibb Manufacturing Company
Humacao, Puerto Rico

May 2007

Anderson Mulholland & Associates
ENVIRONMENTAL CONSULTANTS

Bristol-Myers Squibb Manufacturing Company

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May 24, 2007

Mr. Dale J. Carpenter, Chief
Caribbean Section, RCRA Programs Branch
U. S. Environmental Protection Agency, Region II
290 Broadway, 25th Floor
New York, New York 10007-1866

Dear Mr. Carpenter:

RE: **RCRA Corrective Action Program**
Interim Corrective Measure - Building 5 Area
EPA Facility ID Number PRD090021056

Enclosed are two copies of Bristol-Myers Squibb Manufacturing Company's (BMSMC) Phase 1 Interim Corrective Measure Implementation Report, Building 5 Area. The report summarizes activities associated with implementation of the interim corrective measure completed at the Building 5 Area of BMSMC's Humacao facility.

Sincerely,

Charles Laranjeira
Vice President & General Manager

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Encl
Interim Corrective Measure - Building 5 Area.doc

Building 5
Interim Corrective Measure

Phase 1 Implementation Report

Bristol-Myers Squibb Manufacturing Company
Humacao, Puerto Rico

May 2007

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1.0 Introduction

This document presents a completion report for the first phase of an Interim Corrective Measure (ICM) being implemented at the Bristol-Myers Squibb Manufacturing Company (BMSMC) facility in Humacao, Puerto Rico. The ICM is being conducted at the "Building 5 Area" which has been designated by the U.S. Environmental Protection Agency (EPA) as Solid Waste Management Unit No. 20. The location of Building 5 and the associated project area is presented in Figure 1. The ICM is part of a RCRA Corrective Action Program being implemented at the Humacao facility in accordance with the terms of BMSMC's RCRA Permit.

Building 5 is a bulk chemical manufacturing facility which has been operational since facility start up in 1972. During a RCRA Facility Investigation (RFI) at the Building 5 area completed in 1997 as part of the RCRA Corrective Action Program, it was determined that underground process waste transfer pipes formerly located at the north east corner of Building 5 had leaked and released hazardous constituents to the subsurface (ENSR, 1997). The pipes had been removed during underground storage tank decommissioning completed in 1987. The release of hazardous constituents from the piping system resulted in impacts to subsurface soil and groundwater in the Building 5 Area. A Corrective Measure Study (CMS) was completed for the Building 5 Area and was submitted to EPA in August 2001 (AMAI, 2001). The CMS was revised and resubmitted to EPA in December 2006 (AMAI, 2006) and is currently under review by EPA. The CMS includes a detailed description of the Building 5 Area as well as discussion on the nature and extent of soil and groundwater impact in the area. The CMS proposed final, long-term remedies for source area soil (excavation and on-site treatment) and impacted groundwater (monitored natural attenuation).

The corrective action objective for soil at the Building 5 Area is to reduce the mass of source area constituents of concern (COCs) within the saturated and unsaturated zone soils to levels that ensure achievement of groundwater remediation goals within a reasonable timeframe. Impacted soil will be excavated, treated on site by ex-situ bioremediation, and either reused on site or shipped off site for proper disposal. It is expected that the source control remedy will require four excavation and treatment phases to complete.

This report describes implementation of Phase 1 of the corrective measure. The area of impacted soil excavated during Phase 1 is referred to as "Area A." Phase 1 activities were implemented in accordance with the EPA-approved Interim Corrective Measure Work Plan for the Building 5 Area (AMAI, 2004), hereinafter referred to as the "ICM Work Plan."

Section 2 of this report provides an overview of the scope of the Phase 1 ICM. Construction of the soil treatment facility is described in Section 3. Section 4 discusses excavation of impacted soil including pre-design soil investigation. Section 5 describes the soil treatment process and performance testing results. Management of treated soil is discussed in Section 6. References are provided in Section 7.

2.0 Scope of Work Summary

2.1 Overview of Interim Corrective Measure

Phase 1 of the Interim Corrective Measure work consisted of the following activities:

- Topographical site survey
- Site preparation including diversion of an existing contractor road and construction of a temporary parking lot
- Construction of soil treatment cell including low permeability liner system and stormwater collection system
- Excavation Area A site preparation including decontamination facilities
- Soil excavation and placement in treatment cell
- Installation of aeration system, soil gas probes and cover system
- Backfilling and restoration of excavation area
- Startup of biopile aeration system including shut down respiration test
- Operation and maintenance of biopile including routine inspection, soil gas monitoring, and soil treatment performance testing
- Reuse or off site disposal of treated soil

Preliminary site activities were completed October – December 2005, including construction of the contractor road, temporary parking lot, and soil treatment facility. Area A soil excavation and placement in the treatment cell was performed during the period of February - March 2006. Backfilling was ongoing during excavation and was completed in March 2006. Final site restoration was completed in April 2006. Commissioning of the aeration system and the start of biopile operation was in April 2006. The final soil treatment performance samples were collected in December 2006. Treated soil was removed from the treatment cell in February-March 2007.

All site activities were performed in accordance with a project-specific Health and Safety Plan and with applicable OSHA requirements. Ambient air was routinely monitored for concentrations of volatile organic compounds during soil excavation to ensure the protection of site workers. The entire remediation work zone was secured by a chain link fence and locked gate with a minimum height of 8 ft to prevent unauthorized entry into the work area.

Photodocumentation of interim corrective measure activities is presented in Appendix A.

2.2 Permitting

In March 2005, BMSMC initiated permitting for the project with the preparation and submittal of an Explanatory Memorandum to the Puerto Rico Industrial Development Co. (PRIDCO) requesting a categorical exclusion to the environmental impact evaluation. In April 2005, PRIDCO granted a categorical exclusion for the project. Permits required for the project included:

- Earth crust removal (Extraccción de Materiales de la Corteza Terrestre)
- Fugitive Dust Control Permit (PFE) (Permiso de Fuentes de Emisión)
- CES Plan (Control de la Erosión y Prevención de la Sedimentación)
- Non-Hazardous Solid Waste Disposal Permit (DS-3)
- Construction permit (ARPE) (Permiso de Urbanización por Administración de Reglamentos y Permisos)
- Monitoring well Closure Permit. Two monitoring wells, G-1R within the footprint of the excavation in Area A and B1 within the footprint of the soil treatment cell required closure.

2.3 Project Organization

The principal organizations used by BMSMC in performing the corrective measure work along with their activities are summarized below:

- Remediation Contractor - Clean Harbors of Braintree, Massachusetts performed the remediation fieldwork including construction of the soil treatment facility, impacted soil excavation and placement on the biopile, backfilling and site restoration.

- Earthwork Contractor - Toro Engineering of Puerto Rico performed the earthwork including clearing and grading of the biopile area and construction of the contractor road, the temporary parking lot and the ramp between the two parking lots.

- Off-Site Soil Disposal – BFI Industrial Landfill of Ponce, Puerto Rico and Waste Management Inc. of Humacao, Puerto Rico, both RCRA-regulated Subtitle D non-hazardous waste disposal facilities, were used for disposal of non-hazardous waste. No hazardous waste was generated during ICM implementation.

- Laboratory – Accutest Laboratories of Dayton, New Jersey and Environmental Quality Laboratories, Inc. of Santurce, Puerto Rico provided analytical services for soil testing.

- Surveyors - Kelly Alverez & Associates, Inc. of Caguas, Puerto Rico, prepared a site base map as part of the design documents for the project.

- Oversight Consultant - Anderson Mulholland & Associates, Inc. (AMAI), of White Plains, New York was retained to ensure that the interim measures were implemented in accordance with the EPA-approved work plan.

3.0 Construction of Soil Treatment Facility

The soil treatment facility was constructed in an undeveloped area within the eastern portion of the BMSMC facility. The location of the facility is presented in Figure 1. Selection of the site was based on such considerations as proximity to the excavation areas, the topography of the area, existing utilities services, and access roads. Prior to construction of the treatment cell, an existing contractor access road was relocated and a temporary parking lot was constructed. Locations of these features are also shown in Figure 1. The facility was constructed in accordance with an April 2005 Basis of Design Report (Malcolm Pirnie, 2005).

A plan of the soil treatment facility is presented in Figure 2. A cross section and details are presented in Figure 3. The single-cell unit consists of a 60 mil high density polyethylene liner placed on the graded ground surface. The dimensions of the cell are 148 ft by 80 ft and encompass approximately 11,840 ft2. The treatment cell is surrounded by 18-inch high lined berms which control runon and runoff. A 12-inch layer of soil/gravel covered by a geotextile fabric is placed over the liner to promote drainage of leachate and to protect the liner form damage by heavy equipment. Four-inch corrugated, perforated water collection piping is contained in the soil/gravel layer to collect leachate. Leachate is removed from the system periodically by pumping and disposed of at BMSMC's wastewater treatment plant. The soil treatment cell has the capacity to manage approximately 2,000 cubic yards of impacted soil during each phase.

The soil treatment cell slopes at 1% to 2% toward the east to ensure proper drainage of stormwater and any leachate that may be generated during soil treatment. A stormwater catch basin is located at the western end of the treatment cell from which collected stormwater is conveyed to a concrete stormwater sump located north of the treatment cell. From this sump, stormwater is pumped via a force main to BMSMC's facility-wide stormwater collection system. During construction of the stormwater conveyance system, approximately 40 cubic yards of impacted soil was excavated. This soil was tested and placed in the soil treatment facility for treatment. Sampling results for this soil are presented in Table 1. The complete laboratory report is presented on a CD-ROM in Appendix I.

The soil treatment facility aeration system consists of a pair of Rietschle Thomas Regenerative Blowers each with a maximum air flow of 210 scfm and maximum pressure of 106 IWG. The blowers are mounted on a 6ft by 6ft reinforced concrete slab and are

connected to 3-inch Schedule 40 PVC headers and 27 2-inch PVC laterals, each equipped with a 2-inch PVC ball valve to control air flow into the soil treatment unit. The configuration of the aeration system is presented in Figure 2.

Prior to construction of the treatment cell, four surface soil samples were collected beneath the footprint of the unit in order to establish baseline soil quality conditions to ensure that operations do not impact underlying soil. Samples were collected immediately below ground level from the approximate centers of four quadrants covering the footprint of the unit. Soil sampling results are presented in Table 2. The complete laboratory report is presented on a CD-ROM in Appendix I. No constituents of concern were detected.

4.0 Excavation of Impacted Soil

4.1 Summary of Scope

Phase 1 of the Interim Corrective Measure work involved the excavation of approximately 1,800 cubic yards of impacted soil from the Building 5 Area. The area of excavation addressed during Phase 1 is referred to as Area A. The dimensions of Area A are approximately 80 ft by 140 ft. The approximate location of the excavation area is presented in Figure 1. Previous soil sampling detected levels of xylene, ethylbenzene, and MIBK in soil in excess of applicable soil screening levels in this area. Depth of impacted soil ranged from approximately 4 ft to as deep as 12 ft although these depth intervals varied throughout the excavation area as discussed below. Clean cover soil excavated to access impacted soil was reused as fill during site restoration. As per ICM Work Plan provisions, confirmatory sampling at the base and sidewalls of the excavation was not required.

4.2 Pre-Design Soil Investigation

Prior to commencement of soil excavation at Area A, a soil quality investigation was conducted. The objectives of the soil investigation are as follows:

- To verify the bottom depth of clean soil within Area A which may be reused as backfill
- To provide a contamination profile within Area A to aid in planning of the excavation process, including estimation of volumes of soil that may be shipped directly off-site for disposal and of soil likely to require on-site treatment in a biopile prior to off-site disposal
- To test the contaminated soil for nutrient levels which are important parameters for proper operation of the on-site biopile

The soil investigation was performed within and adjacent to excavation Area A. For the purposes of locating soil borings, the area was divided into 20 equal size cells, each of about 560 ft^2 (20 ft by 28 ft). In addition, a row of four cells was delineated at the northern and southern borders of Area A in order to identify impacted soil that may exist outside of the proposed excavation area. A soil boring was performed at the approximate center of each of the 28 cells. The soil investigation was conducted in March 2005.

For four of the cells sampled in March 2005, a clean depth of cover material was not identified These four cells were resampled at shallower depths during excavation activities. In each case, a clean cover depth was determined.

A copy of the Pre-Design Soil Investigation Report, as amended to include supplemental soil samples, is presented in Appendix B. This report provides a detailed description of the scope and results of the soil investigation.

4.3 Soil Excavation

As described above, Area A was subdivided into a series of cells, each with dimensions of 20 ft by 28 ft. Excavation of impacted soil proceeded cell by cell as described below. Prior to commencement of excavation, asphalt, concrete curbing, and parking blocks were removed and placed in roll-off containers for proper off-site disposal at an industrial landfill. A list of manifests for this material is presented in Appendix H. Copies of manifests are maintained at the BMSMC facility. Excavation within Area A commenced on February 6, 2006 and was completed on March 1, 2006.

Clean Cover Material

At each cell, clean cover material was excavated to the pre-determined depth as described in Section 4.2. All material removed was set aside and returned to the excavation as backfill following removal of impacted soil. A total volume of approximately 2,700 cy was removed and placed back into the excavation.

Potentially Contaminated Soil

At each cell, the first one foot interval of soil immediately below the clean horizon was classified as 'potentially contaminated.' The oversight contractor representative decided at each cell whether this material should be placed into roll off containers for testing or whether it should be placed directly into the biopile. This decision was based on apparent degree of contamination considering visual and olfactory observations of the material and PID readings. The objective was to attempt to identify marginally contaminated soil that may be returned to the excavation or sent directly off site without treatment, thereby conserving space in the treatment cell for only the mostly heavily impacted soil.

Potentially contaminated soil was identified at eight cells, placed in dedicated roll-off containers, and tested for constituents of concern. Test results are presented in Table 3. The complete laboratory report is presented on a CD-ROM in Appendix I. For seven of

the eight roll-offs, COC concentrations were below Tier 2 soil screening levels as defined in the ICM Work Plan and soil was consequently returned to the excavation as fill. For the remaining roll-off, COC concentrations exceeded Tier 2 levels but were below Tier 1 levels. This soil, approximately 20 cubic yards, was sent directly off-site to an industrial landfill. The manifest for this soil is identified in Appendix H.

Impacted Soil Excavation

Below the 'potentially contaminated' zone, all excavated soil was stockpiled adjacent to the excavation and was moved immediately to the biopile. The termination depth for excavation at each cell was pre-determined based on the results of the soil screening conducted during the pre-design soil investigation as described above. Modifications to proposed excavation depths were decided in the field based on visual/olfactory evidence of further contamination and soil gas readings.

A 25-ton tracked excavator with a reach of approximately 25 ft was used for the excavation. Material was moved to the biopile by a loader of bucket size approximately 3 yd3. Groundwater was encountered in most of the cells but the inflow was very low and generally restricted to depths of greater than 10 ft. Dewatering of the excavation was not required. Excavation sidewalls were stable and generally stood vertical without the need for a cut back into adjacent areas. Each cell was backfilled to a depth of approximately 5 to 8 ft below ground surface (bgs) immediately following completion of excavation to depth.

The footprint of the proposed excavation area was modified based on the results of the March 2005 soil investigation. The actual footprint of the excavation is presented in Figure 4. Specifically, cells PD-20, PD-13, and PD-9 were not excavated due to the depth and limited volume of impacted soil within the cells. As an alternative, cells PD-22, PD-23, and PD-24, located to the north of the original footprint, were excavated. Soil samples from these cells showed high levels of impact. Excavation of an additional cell, PD-30, located immediately north of PD-22, was partially completed (area of 20 ft by 15 ft). Excavation of this cell was terminated because the biopile had reached its full capacity.

A schematic section of each of the excavated cells is presented in Appendix C along with a table summarizing dimensions, excavation depths, and approximate volume of soil removed from each cell. The following information is included:

- The bottom depth of the clean cover material layer

- The depth of any soil that was shipped directly offsite for disposal (PD-11)
- The bottom depth of the excavation
- The approximate volume of impacted soil excavated from each cell (calculated based on the dimensions of the cells).

The total volume of impacted soil excavated from Area A for placement in the biopile is estimated at 1,800 cubic yards.

Eight samples of excavated contaminated soil were randomly collected prior to placement in the biopile and tested for constituents of concern. The objective of the sampling was to determine the baseline contamination level within the soil prior to commencement of soil treatment. Results show levels of contamination well in excess of soil screening levels. Two soil samples were also randomly collected from the base of the excavation to provide an indication of the extent of contamination of soil left in place. Results show the level of contamination well below that of the removed material. Sample results for the impacted soil samples and base samples are presented in Tables 4 and 5, respectively. Full laboratory reports are presented on the CD-ROM included in Appendix I.

Due to occasional fugitive VOC emissions and associated odors during excavation activities, odor suppressant foam was used on stockpiled soil and within the excavation as necessary. As well as monitoring the excavated material with a photoionization detector (PID), perimeter PID readings were collected during excavation to monitor the impact of vapors from the excavation on ambient conditions.

4.4 Site Restoration

Upon completion of excavation at each cell, clean material was immediately returned to the excavation for use as backfill. During deep backfill operations, the excavator bucket was used to compact the material. A geotechnical engineer, Juan Rodriguez of Geotechnics C.S.P., San Juan, Puerto Rico, visited the site on February 9 and confirmed that the excavated clean material had suitable geotechnical properties to be used as backfill up to a maximum level of 5 ft bgs. Cells were backfilled with clean cover material to between 5 and 8 ft bgs.

From the top of the clean cover material backfill, imported fill material consisting of gravel within a clay matrix locally known as 'magolla' was placed and compacted with a roller. Testing demonstrated that the BMSMC-required compaction of 90% Modified Proctor was achieved.

The parking lot was restored to its previous condition with an asphalt surface, concrete curbing and wheel stops. Site fencing around the parking lot was restored to its original condition.

5.0 Impacted Soil Treatment

5.1 Biopile Construction

Impacted soil was transferred directly from the excavation area to the soil treatment cell using a front end loader. The soil was placed in the treatment cell in a manner that prevented heavy equipment from driving on top of placed soil, thereby assuring maximum soil permeability for the flow of air. Soil was placed to a maximum height of approximately eight ft. Side slopes are approximately 1:1. The total volume of the completed biopile is approximately 1,800 cy. The completed biopile was surveyed by a PR-licensed surveyor. As-built plans and sections of the biopile are presented in Appendix D.

A pre-measured volume of dry granular urea was manually added to each bucket of contaminated soil as it was transported to the biopile as a source of nitrogen. It had been determined by laboratory analysis of samples during the pre-design investigation that the soil was mildly nitrogen deficient. Based on the laboratory results, the necessary volume of urea was calculated to produce the desired carbon to nitrogen ratio for optimum bioactivity in the soil.

During soil placement, flexible perforated 4-inch PVC aeration pipes were installed within the pile. A total of 27 pipes were placed transversely within the biopile at two levels. The pipes were connected to the 2-inch rigid PVC pipe external to the soil pile as described above. The configuration of the aeration pipes is presented in Figure 2 (plan) and Figure 3 (section).

Twelve soil gas probes consisting of pea-gravel filled suction strainers and ¼-inch nylon tubing were placed within the biopile upon completion of soil placement. An engineering drawing of typical soil gas probe and probe locations and depths is presented in Appendix D. Eighteen soil moisture probes were also installed in the biopile. A description and locations of soil moisture probes are presented in Appendix F. Soil gas and moisture probes were installed by advancing a hand auger to the specified depth. After placement of the probes, the boreholes were backfilled with the same soil and properly compacted to prevent short-circuiting of air flow and preferential pathways for free liquids.

Following placement of soil gas and moisture probes, a cover system was installed on the biopile. The cover consisted of a non-woven, synthetic, UV-protected fiber cover designed to be permeable to oxygen, carbon dioxide, and water vapor but only semi-

permeable to water. The cover was intended to minimize entry of rainwater into the pile while allowing free transfer of gases. The cover system was securely fastened to prevent damage during tropical storms. The cover system was modified at the onset of the hurricane season in August 2006 to include a 20 mil HDPE liner over the top (but not the side slopes) of the biopile. The objective of the modification was to eliminate entry of severe tropical storm rainwater into the biopile.

5.2 Treatment System Startup

Blower Startup

Upon installation and securing of the cover system and visual inspection all aeration system components, blowers were started up on April 3, 2006. Air flow was adjusted to deliver a total of approximately 125 scfm to the biopile as per Basis of Design Report specifications.

On April 4, the air flow into the biopile through the 27 laterals was balanced to ensure equal distribution of air (and oxygen) throughout the pile. Air flow at each lateral was measured at a monitoring point on the 2-inch PVC pipe using a hot wire anemometer as described in Appendix F and adjusted using the respective ball valve as necessary. Field data sheets for the April 4 monitoring event are presented in Appendix G.

Shut Down Respiration Test

After allowing at least one week of operation to ensure that the biopile is fully aerated and that adequate oxygen is being delivered to allow biodegradation of contaminants, a shut down respiration test was performed on April 11-12, 2006. The objectives of the respiration test were as follows:

- To give a clear indication by the change in measured gas values that an active aerobic microbe population is present in the biopile.
- To gather data to assess biopile performance.

A copy of a memorandum summarizing the respiration test is presented in Appendix E. This memorandum describes the test procedure and results and provides tabulated and graphic data. Field data sheets for the respiration test are presented in Appendix G. The results provided a clear indication of a healthy aerobic microbe population and active biodegradation of contaminants.

5.3 Biopile Operation and Maintenance

During the active life of the biopile (i.e., from the time the blower is started until it is shutdown after achievement of soil treatment standards), routine visual inspections and biopile monitoring were conducted. Inspections were performed to ensure that all system components were secure and properly functioning. Monitoring of soil gas and soil moisture was performed to enable BMSMC to assess the effectiveness of the soil treatment process, to identify conditions which may impede optimum soil treatment, and to provide an indication of the time frame for achievement of soil treatment performance standards.

The Biopile Monitoring Plan is included in Appendix F. This plan provides detailed information on the inspection and monitoring schedule, sample probe locations, and forms to be filled out to document inspections and monitoring events. Equipment to be used to conduct soil gas monitoring and soil moisture measurements is also described. Appendix G includes copies of field forms that were filled out during the life of the biopile.

5.4 Soil Treatment Performance Testing

In order to assess performance of the biopile treatment process in reducing the concentrations of contaminants in impacted soil and to determine when treatment goals were achieved, routine soil sampling of biopile soil was conducted. The protocol for soil sampling is described in the ICM Work Plan. Soil sample locations and depths are shown in Figure 5. Soil sampling results are presented in Table 6. The full laboratory reports are presented on a CD-ROM in Appendix I.

During the first round of sampling conducted on June 6, 2006, a soil sample was collected within each of the eight pre-defined cells. Each sample location was at the approximate center of the respective cell. Of the eight samples, soil results from five were below the Tier 1 and Tier 2 project standards as defined in the ICM Work Plan for the contaminants of concern (xylene, ethyl benzene and MIBK). These five locations were not subject to further sampling. At three of the locations, BP-1S, BP-2D, and BP-5D results from the first sampling round exceeded the project standards and resampling was necessary.

During the second round of sampling conducted on August 8, 2006, soil samples were collected at offsets of approximately 2 ft from the three locations that exceeded soil

screening levels. For one of the samples, BP-1S, the results were below both the project standards. For the other two locations results for both xylene and ethyl benzene exceeded the project standards.

During the third sampling event conducted on October 10, 2006, the two locations BP-2D and BP-5D were resampled at offsets of approximately 2 ft. The sample result from BP-2D exceeded the project standards. The sample result from BP-5D was between the Tier 1 and Tier 2 standards and therefore suitable for off-site disposal in a RCRA Subtitle D industrial landfill.

During the fourth sampling event conducted on December 6, 2006, location BP-2D was resampled at an offset of approximately 2 ft. The sample result was between the Tier 1 and Tier 2 standards and therefore suitable for off-site disposal in a RCRA Subtitle D industrial landfill.

In summary, either Tier 1 or Tier 2 soil screening levels were achieved at all eight soil sampling locations. At the six locations BP-1S, BP-3S, BP-4D, BP-6S, BP-7D, and BP-8S, the more stringent Tier 2 levels were achieved thus allowing soil within these cells and depth intervals to be reused onsite without restriction as per the ICM Work Plan. At locations BP-2D and BP-5D, Tier 1 levels were achieved. Soil from within these cells and depth intervals was sent offsite for disposal in an industrial landfill.

6.0 Treated Soil Management

Dismantling of the biopile was performed in February-March 2007 to coincide with implementation of the second phase of the source area soil remedy at the Building 5 Area. Phase 2 involved the excavation of approximately 2,000 cy of impacted soil from an area adjacent to Area A. The Phase 2 excavation area is referred to as Area B.

Treated soil removed from the soil treatment facility was either sent offsite for disposal at an industrial landfill or was returned to the Area B excavation for use as backfill, as described below.

- Approximately 1,600 cy of treated soil were sent offsite for disposal at the Waste Management industrial landfill located in Humacao, Puerto Rico. As required by the landfill, soil was first tested for RCRA characteristics. Test results demonstrated that the treated soil did not exhibit a characteristic of hazardous waste. The laboratory report is presented on the CD-ROM included in Appendix I. Treated soil was live loaded onto trucks directly from the biopile and was transported immediately to the landfill. Soil sent offsite for disposal included that from the cells and depth intervals represented by samples BP-2D and BP-5D (as describe above) which did not achieve Tier 2 screening levels and thus was not permitted to be reused onsite. Related biopile debris, including the cover system, soil gas monitoring components, flexible aeration pipes, scrap lumber, etc. were also shipped to the landfill for disposal. A list of all manifests is presented in Appendix H. Copies of manifests are maintained at the BMSMC site.

- The remaining soil removed from the biopile, approximately 200 cy, was used as backfill for the Area B excavation. Soil was removed from the biopile, stockpiled, and used as necessary. Biopile debris was segregated from the soil prior to use as backfill and was sent offsite for disposal at the industrial landfill.

7.0 References

AMAI, 2001. Anderson, Mulholland & Associates, Inc. Corrective Measures Study Report, Building 5 Area, Revision 1, Squibb Manufacturing Inc., Humacao, Puerto Rico. August 2001.

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ENSR, 1997. RCRA Facility Investigation, Bubbling Gas Study Area, Squibb Manufacturing Inc. May 1997.

Malcolm Pirnie, 2005. Basis of Design Report, Interim Corrective Measure Building 5 Area, Bristol-Myers Squibb Manufacturing Company, Humacao, Puerto Rico. April 2005.

Table 1
Soil Sampling Results
Impacted Soil from Stormwater Sump Excavation
Bristol-Myers Squibb Manufacturing Company
Humacao, Puerto Rico

Sample ID	SP-1	SP-2
Sample Depth	(5-14)	(5-14)
Sample Date	25-Jan-06	25-Jan-06
Reporting units are in ug/kg.		
Ethylebenzene	104,000	262,000
MIBK	2,780	568
Xylenes	374,000	965,000

Table 2
Soil Sample Results
Soil Treatment Cell Baseline Conditions
Bristol-Myers Squibb Manufacturing Company
Humacao, Puerto Rico

Sample ID	BP-1	BP-2	BP-3	BP-4
Sample Depth	(0-0.25)	(0-0.25)	(0-0.25)	(0-0.25)
Sample Date	13-Jan-06	13-Jan-06	13-Jan-06	13-Jan-06
Reporting units are in ug/kg.				
Ethylebenzene	0.55 U	0.54 U	0.56 U	0.58 U
Xylenes	1.30 U	1.20 U	1.30 U	1.30 U
MIBK	0.60 U	0.59 U	0.61 U	0.64 U

Table 3
Soil Sampling Results - Potentially Contaminated Soil
Bristol-Myers Squibb Manufacturing Company
Humacao, Puerto Rico

Sample Location	Tier 1	Tier 2	Cell 17	Cell 17	Cell 14	Cell 16	Cell 16	Cell 11	Cell 5	Cell 7	Cell 2
Sample Depth	Limit	Limit	(8.5-9.5)	(8.5-9.5)	(6-7)	(5-6)	(5-6)	(7.7.5)	(8.5-9)	(8.25-8.5)	(5-6.5)
Reporting units are in ug/kg.				(duplicate)							
MIBK	330,000	19,000	ND	ND	ND	ND	ND	750	ND	ND	7,039
Ethylbenzene	100,000	13,000	2,018	1,952	1,890	22	64	22,830	2,530	818	6,959
m,p-Xylene	--	--	6,103	5,826	6,317	24	71	60,038	7,560	3,162	13,378
o-Xylene	--	--	616	556	523	ND	ND	3,353	710	205	790
Total Xylene	300,000	190,000	6,719	6,382	6,840	24	71	63,391	8,270	3,367	14,168

Any values exceeding Tier 1 or Tier 2 standards are shown shaded.

-- not available

ND- not detected

Table 4
Soil Sampling Results - Impacted Soil
Bristol-Myers Squibb Manufacturing Company
Humacao, Puerto Rico

Sample ID Sample Depth	Tier 1 Limit	Tier 2 Limit	PD-14 (9-9.5)	PD-11 (9.5-10)	PD-7 (8.5-9)	PD-3 (8.5-9)	PD-4 (11.5-12)	PD-24 (7.5-8)
Reporting units are in ug/kg								
MIBK	330,000	19,000	1,580	24,776	ND	86,174	16,522	33,463
Ethylbenzene	100,000	13,000	195,000	175,025	537,361	5,195	348,670	679,450
m,p-Xylene	--	--	--	602,651	1,725,397	1,795,987	1,331,042	1,989,200
o-Xylene	--	--	--	64,192	128,478	82,797	149,316	115,600
Total Xylene	300,000	190,000	493,000	666,843	1,853,875	1,878,784	1,480,358	2,104,800

-- not available
ND- not detected

Table 5
Soil Sampling Results - Excavation Base
Bristol-Myers Squibb Manufacturing Company
Humacao, Puerto Rico

Sample ID Sample Depth Sample Date	Tier 1 Limit	Tier 2 Limit	PD-8 (11-11.5)	PD-3 (11-11.5)
Reporting units are in ug/kg				
MIBK	330,000	19,000	30.8	22.3
Ethylbenzene	100,000	13,000	ND	8.7
m,p-Xylene	--	--	ND	28.3
o-Xylene	--	--	ND	ND
Total Xylene	300,000	190,000	ND	ND

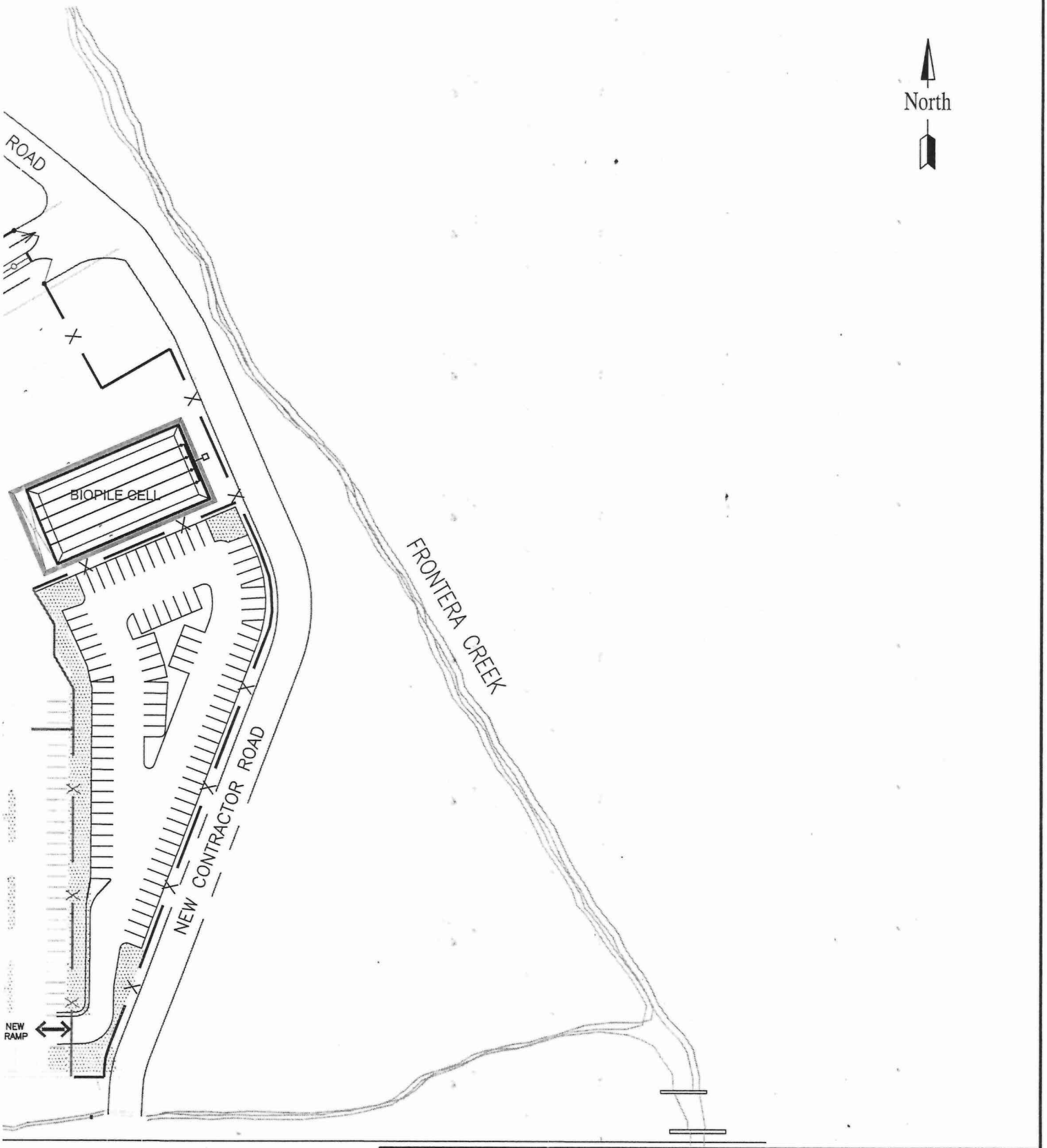
-- not available
ND- not detected

Table 6
Soil Sampling Results
Biopile Performance Testing
Bristol-Myers Manufacturing Company
Humacao, Puerto Rico

Sample ID	Tier 1 Level	Tier 2 Level	BP-1S	BP-1S	BP-2D	BP-2D	BP-2D	BP-2D	BP-3S
Sample Depth	RCRA	EPA SSLs	(2-2.5)	(2-2.5)	(6-6.5)	(6-6.5)	(6-6.5)	(6-6.5)	(2-2.5)
Sample Date	Subtitle D		6 June 06	8-Aug-06	6 June 06	8-Aug-06	10-Oct-06	8-Dec-06	6 June 06
Reporting units are in ug/kg.									
Ethylebenzene	100,000	13,000	1,500,000	4	1,500,000	1,640,000	1,750,000	49,900	ND
Xylenes	300,000	190,000	4,470,000	8	4,750,000	5,230,000	5,280,000	102,000	ND
MIBK	330,000	19,000	ND	13	ND	ND	22,200	ND	ND
Any values exceeding Tier 1 or Tier 2 standards are shown shaded									

Sample ID	Tier 1 Level	Tier 2 Level	BP-4D	BP-5D	BP-5D	BP-5D	BP-6S	BP-7D	BP-8S
Sample Depth	RCRA	EPA SSLs	(6-6.5)	(6-6.5)	(6-6.5)	(6-6.5)	(2-2.5)	(6-6.5)	(2-2.5)
Sample Date	Subtitle D		6 June 06	6 June 06	8-Aug-06	10-Oct-06	6 June 06	6 June 06	6 June 06
Reporting units are in ug/kg.									
Ethylbenzene	100,000	13,000	ND	223,000	598,000	60,600	ND	459/5,180	ND
Xylenes	300,000	190,000	9	932,000	2,080,000	133,000	ND	58/14,000	3
MIBK	330,000	19,000	ND	ND	12,500	4,840	ND	ND	ND
Any values exceeding Tier 1 or Tier 2 standards are shown shaded									

Notes:
ND - not detected



100 200
feet

Scale	Date
as shown	May 2007

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WHITE PLAINS, NEW YORK
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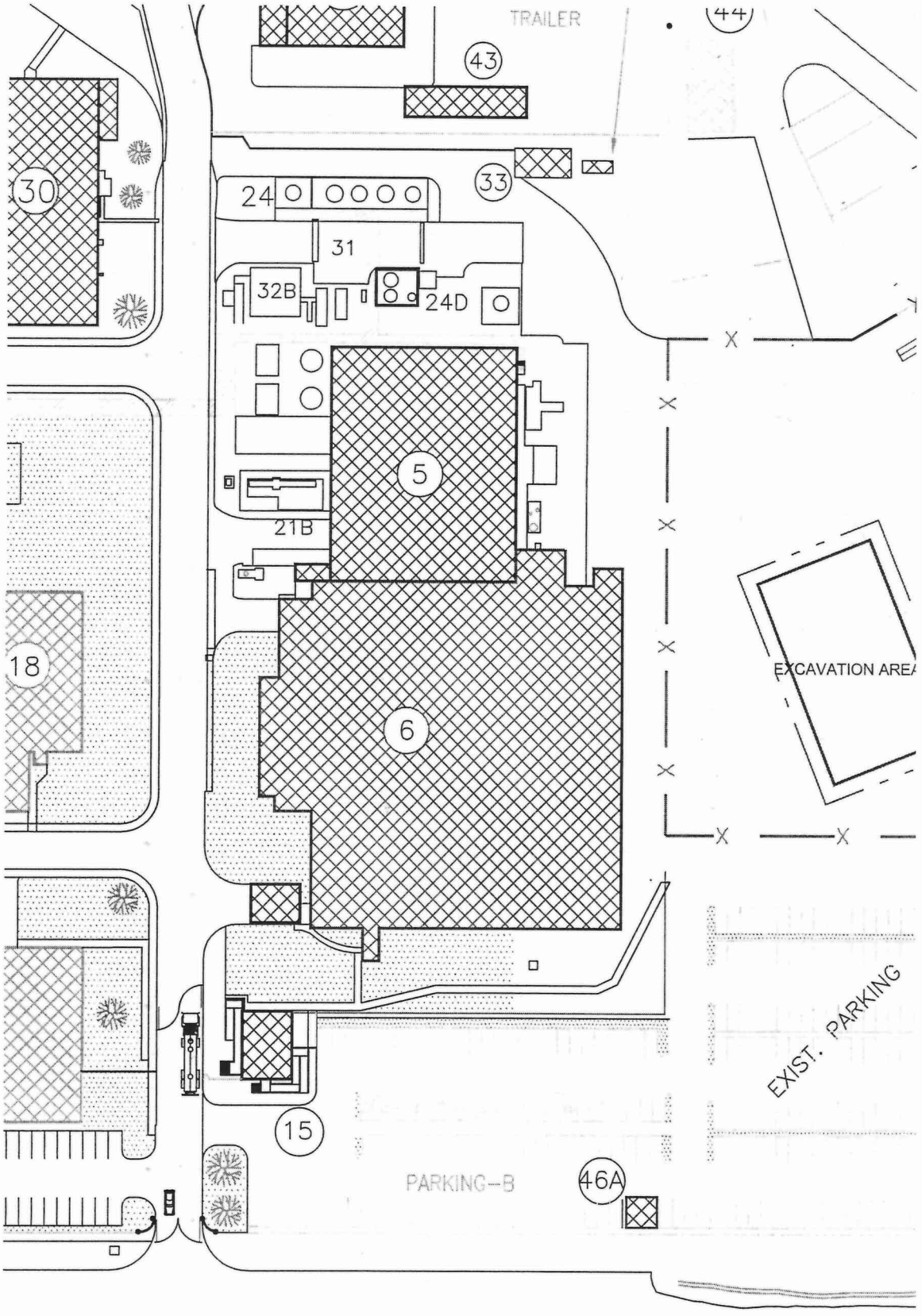
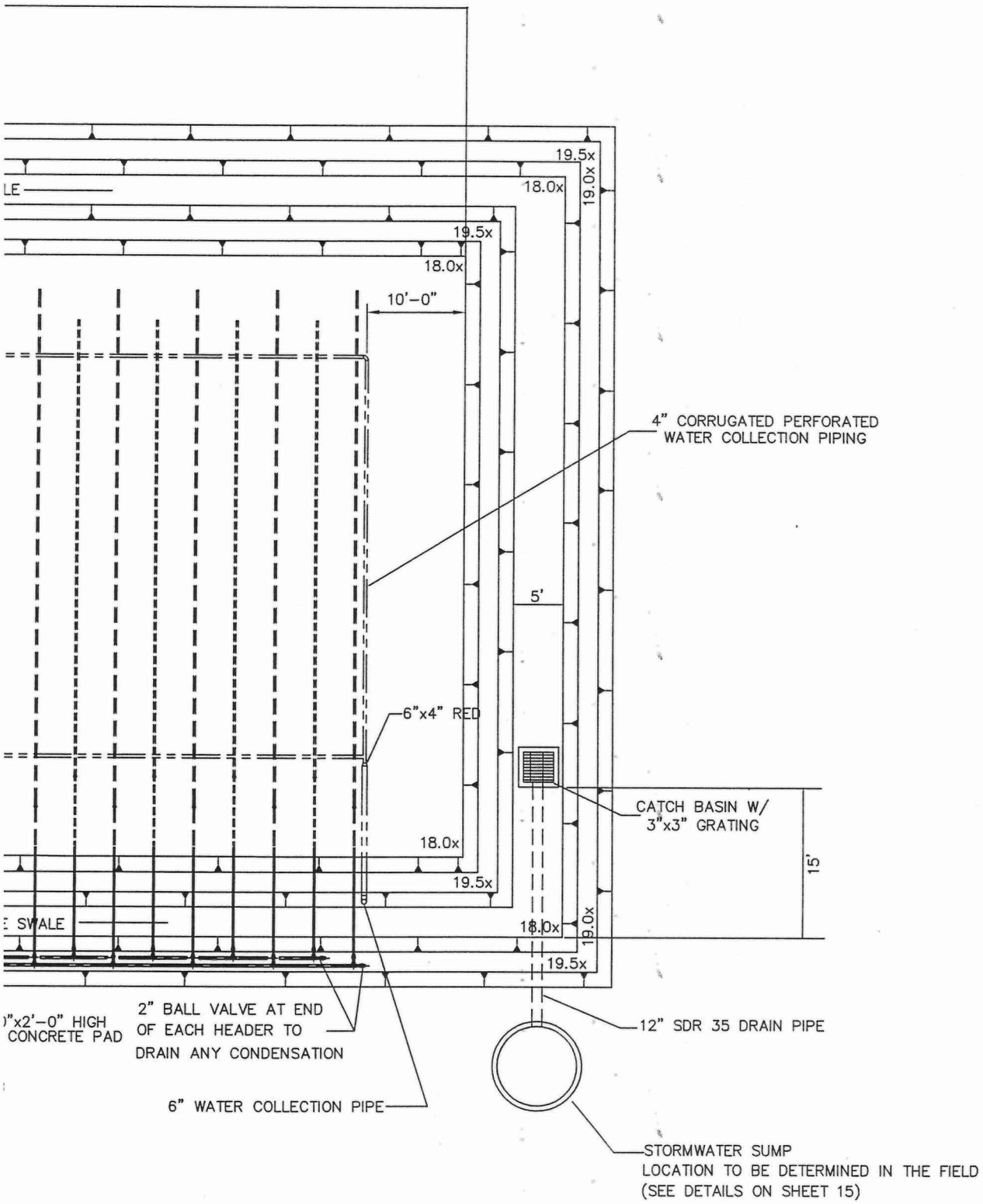
Figure 1
Building 5 Area
Installation Layout

Bristol Myers Squibb Manufacturing Company
Humacao, Puerto Rico


TRAILER
44
43
30
33
24
31
32B
24D
5
21B
18
6
EXCAVATION AREA
EXIST. PARKING
15
PARKING--B
46A
100
Scale



LOWER ZONE PIPING

UPPER ZONE PIPING

feet

30

Scale	Date
1"=15'	May 2007

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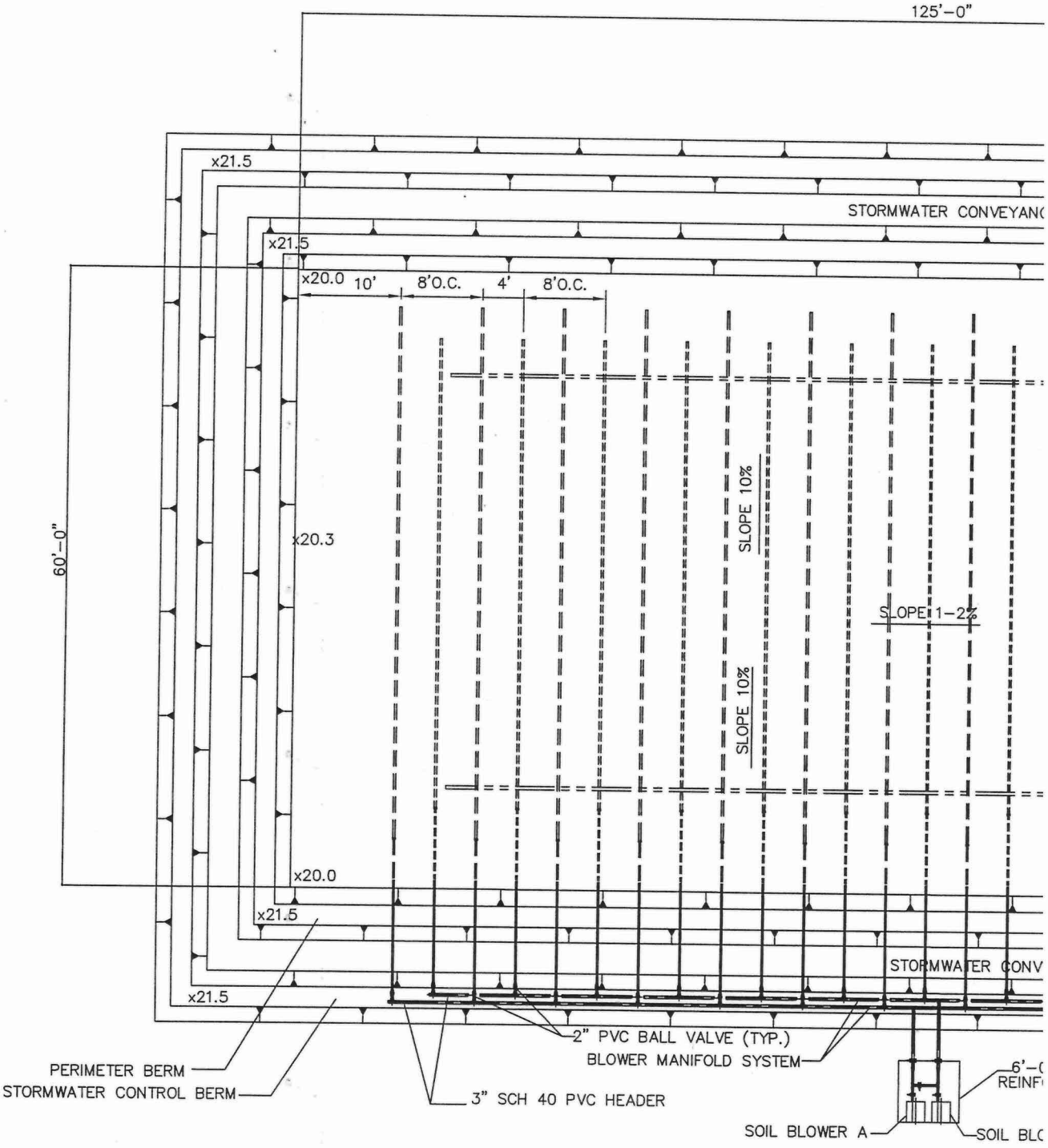
Figure 2
Plan of Soil Treatment Facility

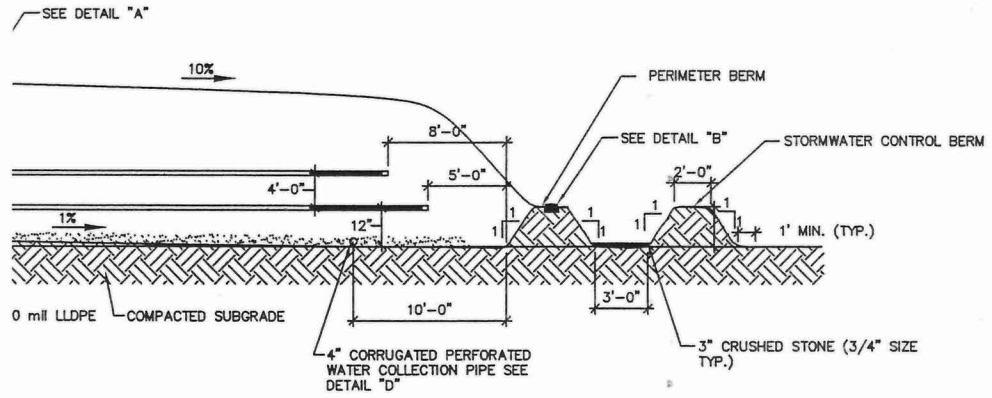
Bristol-Myers Squibb Manufacturing Company
Humacao, Puerto Rico

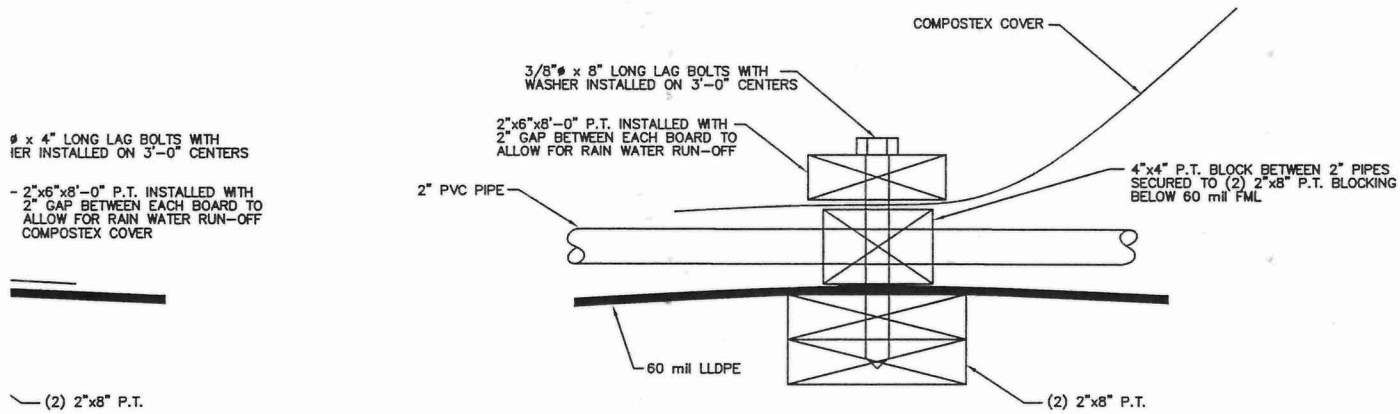


LEGEND:

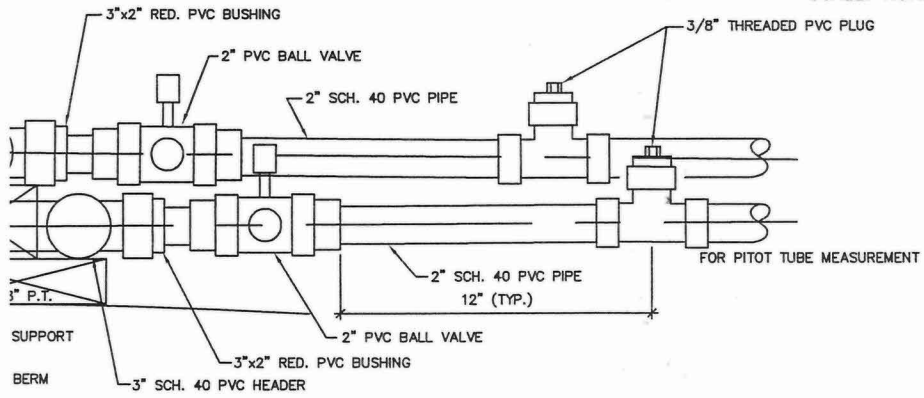
Scale

15 0





DETAIL "C"
SCALE: NONE



DETAIL "E"
SCALE: NONE

Scale	Date
None	May 2007

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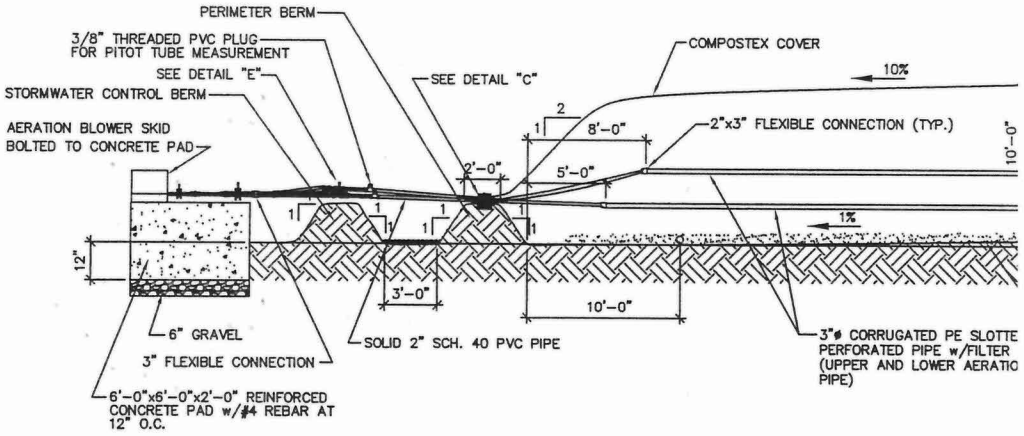
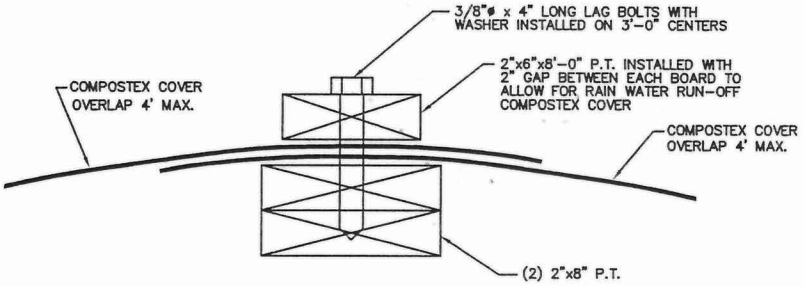
WHITE PLAINS, NEW YORK
SAN JUAN, PUERTO RICO

Figure 3

Cross Section and Details of Soil Treatment Facility

Bristol-Myers Squibb Manufacturing Company
Humacao, Puerto Rico





DETAIL "A"
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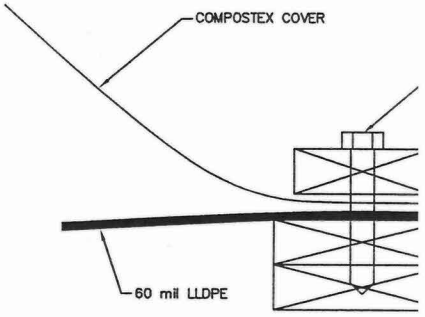
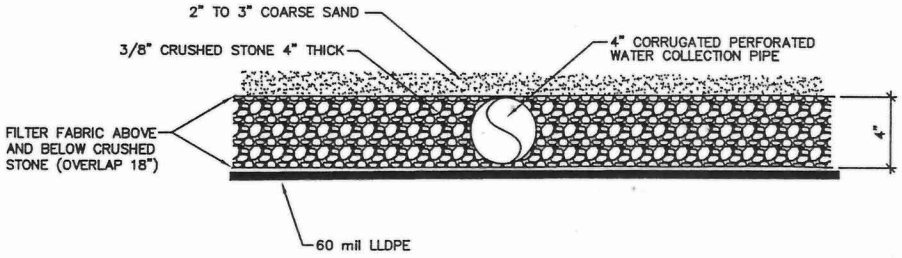
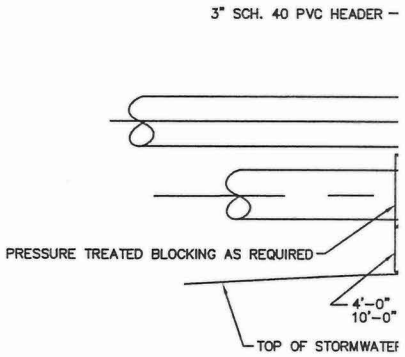
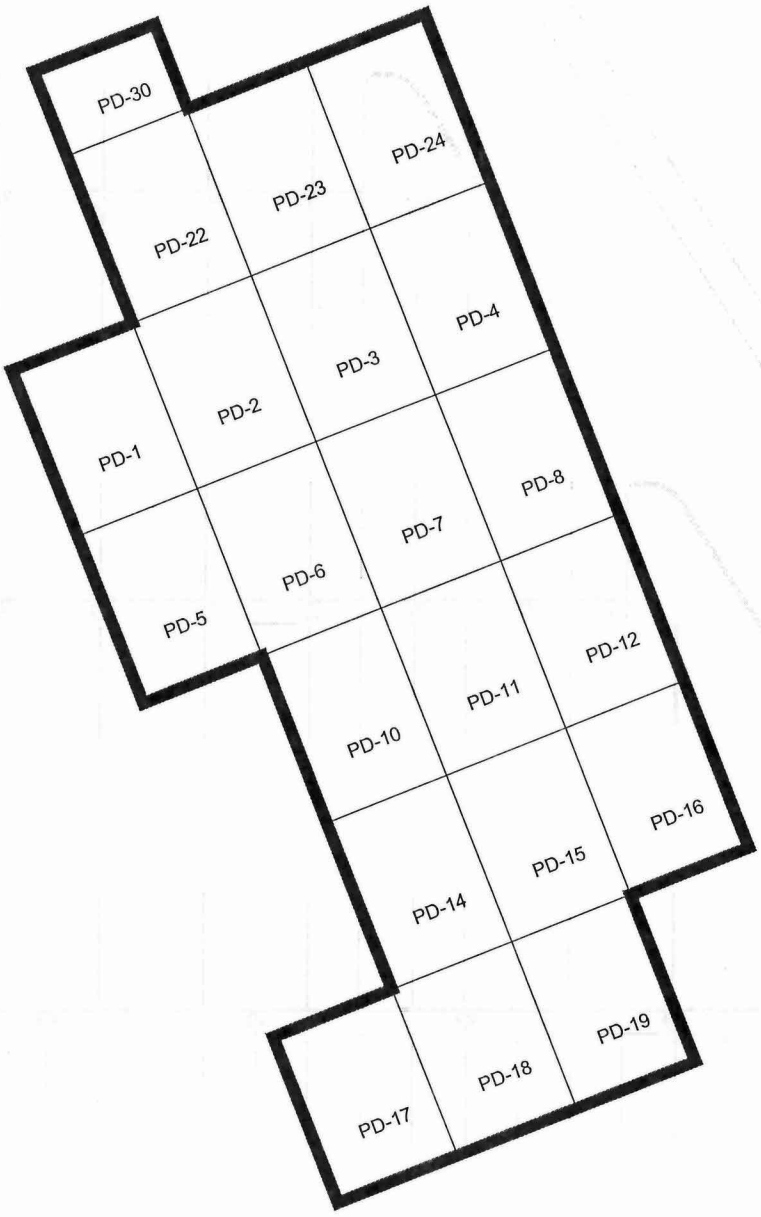


DETAIL "
SCALE: NONE



DETAIL "D"
SCALE: NONE





Scale	Date
1" = 30'	May 2007

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WHITE PLAINS, NEW YORK
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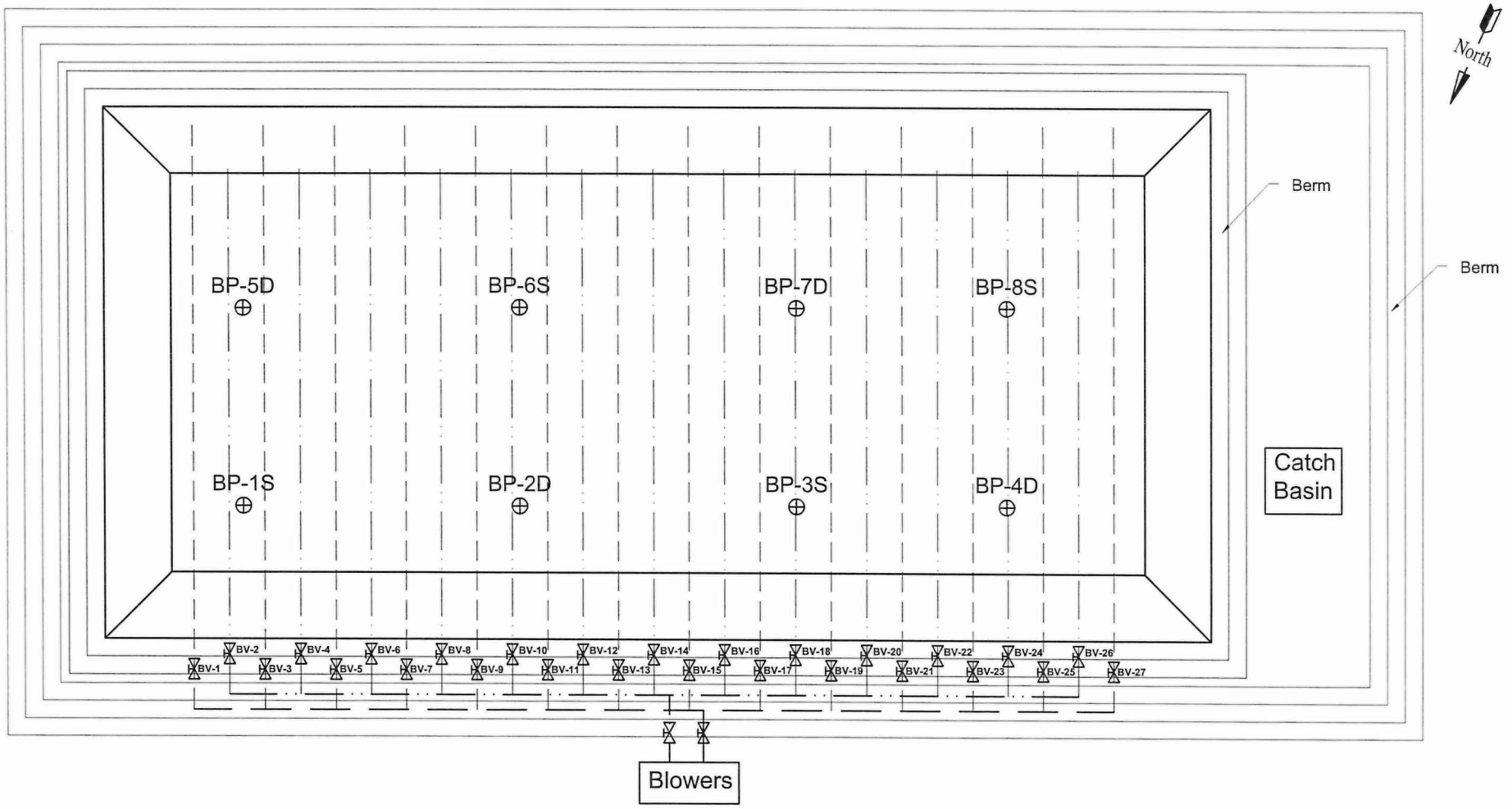
Figure 4

Plan of Excavation
Area A

Bristol-Myers Squibb Manufacturing Company
Humacao, Puerto Rico



LEGEND

Lower areation pipes

Upper areation pipes

BP-1S ⊕ Soil Sample Location
S- Shallow
D- Deep

Scale	Date
not scaled	May 2007

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Figure 5

Soil Treatment Performance Sampling Locations

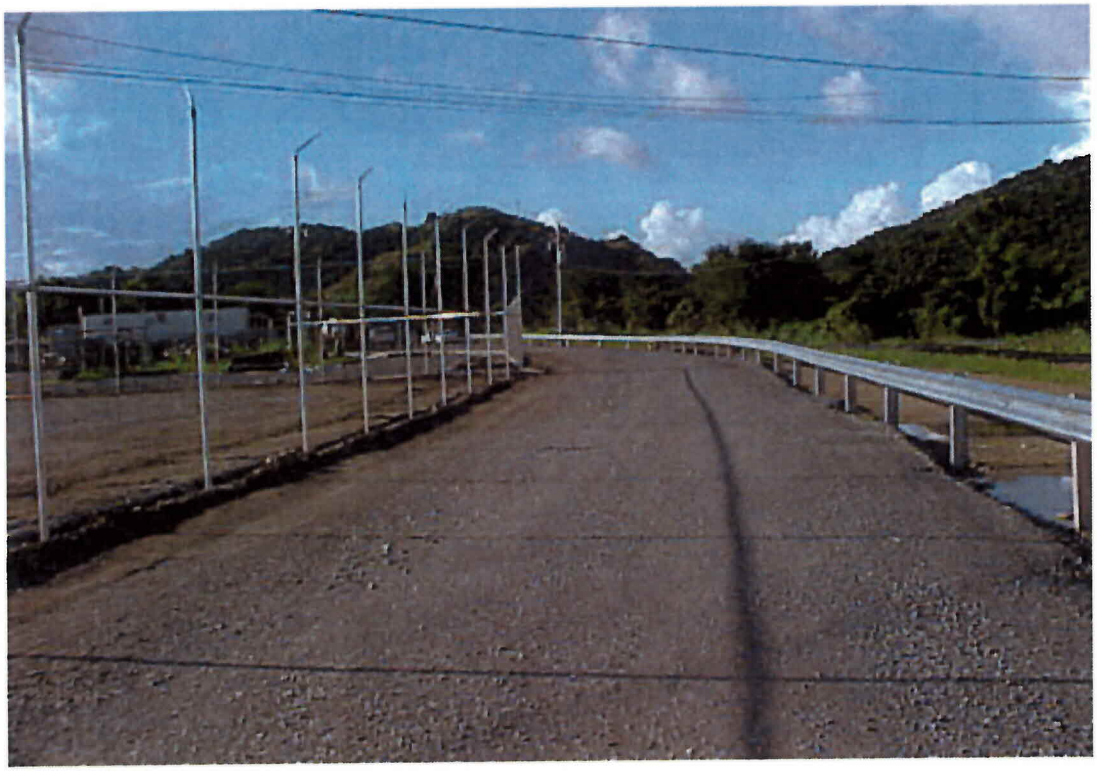
Bristol-Myers Squibb Manufacturing Company
Humacao, Puerto Rico

Appendix A
Photodocumentation of Interim Corrective Measure

Site prior to construction

Vegetation cleared

Ground compacted and gravel base



New contractor road and site fence

New parking lot and treatment cell area

Location of Area A excavation

Construction of treatment cell

Berms designed for cover tie down

Unrolling treatment cell liner

Pulling liner into place

Installation of geotextile and gravel base

Installation of stormwater sump and force main

Installation of force main to existing catch basin on site

Tie in of force main to existing catch basin

Area A excavation

Transporting soil to treatment cell

Loading soil onto treatment cell

Excavation process

Excavation sidewalls

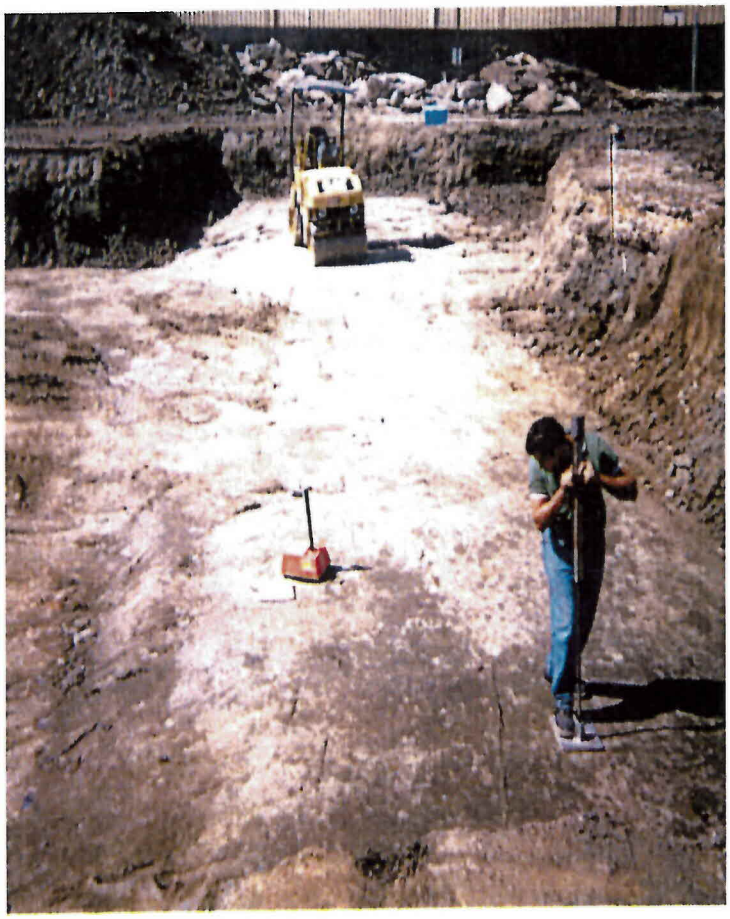
Covered rolloffs of potentially contaminated material

Fence line monitoring

Depths measured from ground surface

Installation of aeration pipes

Nutrient addition



Compaction of soil by roller and compaction testing

Installed blowers and pipe work

Completed Biopile with cover

Bristol-Myers Squibb Manufacturing Company

Predesign Soil Investigation Report

Bristol-Myers Squibb Manufacturing Company Humacao, Puerto Rico

April 2005

Anderson Mulholland & Associates
ENVIRONMENTAL CONSULTANTS

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Appendices

1.0 Introduction

A soil quality investigation was conducted at the Bristol-Myers Squibb Manufacturing Company (BMS) facility located in Humacao, Puerto Rico. The investigation was conducted as part of the design phase of the Interim Corrective Measure (ICM) to be implemented at a Solid Waste Management Unit at the facility referred to as the Building 5 Area. The ICM is being conducted by BMS as part of a sitewide RCRA Corrective Action Program. The objective of the ICM is to remove a portion of the contaminated soil in the area which may be acting as a source of groundwater contamination. The ICM Work Plan (*Interim Corrective Measure Work Plan, Revision 1.0, August 2004*) was approved by EPA in December 2004.

The area of investigation is the first area proposed for excavation in the ICM Work Plan. This has been designated 'Area A' and is located wholly within the parking lot of the BMS facility. The location of excavation Area A is shown on a site plan in Figure 1.

The objectives of the soil investigation are as follows:

- To verify the bottom depth of clean soil within Area A which may be reused as backfill as requested by EPA in their comments of June 28, 2004 on the Interim Corrective Measure Work Plan
- To provide a contamination profile within Area A to aid in planning of the excavation process, including estimation of volumes of soil that may be shipped directly off-site for disposal and of soil likely to require on-site treatment in a biopile prior to off-site disposal
- To test the contaminated soil for nutrient levels which are important parameters for proper operation of the on-site biopile.

The following sections present a summary of the scope of the soil investigation and a discussion of the soil investigation results.

2.0 Summary of Activities Performed

The soil investigation was performed within and adjacent to excavation Area A. The dimensions of Area A are approximately 80 ft by 140 ft. as shown in Figure 2. For the purposes of locating soil borings, the area was divided into 20 equal size cells, each of about 560 ft^2 (20 ft by 28 ft). In addition, a row of four cells was delineated at the northern and southern borders of Area A in order to identify impacted soil that may exist outside of the proposed excavation area.

A soil boring was performed at the approximate center of each of the 28 cells. Soil boring locations are identified as PD-1 through PD-28 as shown in Figure 2. The boreholes were sunk by a direct push >geoprobe= method to a depth of 12 ft below ground level. Soil cores were continuously screened for evidence of contamination using a photoionization detector (PID) and by visual means in order to qualitatively confirm the contaminated soil interval. Soil borings were performed by GeoEnviroTech, Inc., of Guaynabo, Puerto Rico. Field oversight and soil sampling was conducted by Mr. Nestor Rivera, PG, of AMAI. Soil brings were performed between March 7 and 9, 2005. Soil boring logs are presented in Appendix A.

In order to determine the maximum depth of clean soil within each cell, a soil sample was collected for laboratory analysis from each boring at a depth interval immediately above the inferred impacted soil zone. The top of the impacted zone was estimated based on PID readings and visual and olfactory evidence of contamination. Representative soil samples were also collected for laboratory analysis from the contaminated zone at cells PD-5, PD-20 and PD-23 in order to correlate soil gas readings and quantitative chemical analyses which will assist in the classification of soils during the excavation phase. Duplicate soil samples were collected at two locations.

Soils samples were analyzed for Building 5 Area constituents of concern (COCs) ethylbenzene, xylene, and MIBK by SW-846 Method 8260B. In addition, the three soil samples collected from the contaminated zone were analyzed for carbon, nitrogen, phosphorus, potassium and pH to characterize the nutrient levels in the soil and to determine the need for pre-processing of soil prior to placement in the biopile. Laboratory analysis was conducted by Accutest Laboratories of Dayton, New Jersey.

Following excavation the boreholes were filled with a cement grout. The surface was finished with cold mix asphalt at each location.

3.0 Results of Soil Investigation

In order to evaluate the suitability of shallow soil for reuse as backfill in the area, soil testing results were compared to Soil Screening Levels (SSL) for the migration-to-groundwater pathway (*Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, USEPA, 2002*), as proposed in the ICM Work Plan and agreed to by EPA. Analytical results, as well as SSLs for the constituents of concern, are presented in Table 1. PID readings at respective sampling locations are also included in Table 1. Also included in Table 1 are the analytical results of the three soil samples collected from within the impacted soil zone. Laboratory reports are presented in Appendix B.

The following observations can be made based on the soil sampling results:

- Of the 28 soil samples collected within and adjacent to the footprint of Area A, concentrations of COCs were below SSLs in 22 samples. Therefore, soil from within these cells can be reused as backfill without further testing.
- At six of the 28 soil samples (PD-2, PD-4, PD-15, PD-16, PD-26, PD-27), ethylbenzene was detected at concentrations in excess of its SSL. Prior to implementation of the ICM, resampling will be conducted at these locations at a shallower interval in order to define the depth of clean fill within the cell.
- PID results confirmed the presence of an impacted soil zone within Area A at varying depths ranging from about 5 ft to greater than 12 ft. Elevated levels of COCs were detected in the three deep samples as expected, considering high PID readings and visual and olfactory evidence of contamination. These findings will be considered during the soil excavation process in designating areas for excavation and managing impacted soil after excavation.

Figure 3 presents a preliminary profile of the upper layer of the impacted soil zone based on the shallow soil sampling results. The figure does not consider data from the six cells at which SSLs were exceeded. In lieu of these data, interpolation between adjacent sampling points has been used to complete the profile. The profile will be updated after collection of additional soil samples as discussed above.

The results of analysis of soil for pH and nutrient levels in impacted soil are presented in Table 2.

3.0 Results of Soil Investigation

In order to evaluate the suitability of shallow soil for reuse as backfill in the area, soil testing results were compared to Soil Screening Levels (SSL) for the migration-to-groundwater pathway (*Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, USEPA, 2002*), as proposed in the ICM Work Plan and agreed to by EPA. Analytical results, as well as SSLs for the constituents of concern, are presented in Table 1. PID readings at respective sampling locations are also included in Table 1. Also included in Table 1 are the analytical results of the three soil samples collected from within the impacted soil zone. Laboratory reports are presented in Appendix B.

The following observations can be made based on the soil sampling results:

- Of the 28 soil samples collected within and adjacent to the footprint of Area A, concentrations of COCs were below SSLs in 22 samples. Therefore, soil from within these cells can be reused as backfill without further testing.
- At six of the 28 soil samples (PD-2, PD-4, PD-15, PD-16, PD-26, PD-27), ethylbenzene was detected at concentrations in excess of its SSL. Prior to implementation of the ICM, resampling will be conducted at these locations at a shallower interval in order to define the depth of clean fill within the cell.
- PID results confirmed the presence of an impacted soil zone within Area A at varying depths ranging from about 5 ft to greater than 12 ft. Elevated levels of COCs were detected in the three deep samples as expected, considering high PID readings and visual and olfactory evidence of contamination. These findings will be considered during the soil excavation process in designating areas for excavation and managing impacted soil after excavation.

Figure 3 presents a preliminary profile of the upper layer of the impacted soil zone based on the shallow soil sampling results. The figure does not consider data from the six cells at which SSLs were exceeded. In lieu of these data, interpolation between adjacent sampling points has been used to complete the profile. The profile will be updated after collection of additional soil samples as discussed above.

The results of analysis of soil for pH and nutrient levels in impacted soil are presented in Table 2.

The data collected during this investigation will be used in the ICM design and implementation process in the following ways:

- Based on the depths of clean material, the volume of soil to be excavated can be calculated to ensure that sufficient space is made available on surface for temporary staging.
- The PID data will be used to determine the likely volume of 'potentially contaminated' material, which will be stockpiled onsite and laboratory tested before a decision is made as to whether it will go to the biopile or directly offsite for disposal.
- The PID data will also be used to provide guidance as to the required depth of excavation within each cell of Area A.
- The nutrient data will be used to determine whether the C:N:P ratio in excavated soil needs to be adjusted prior to the addition of the material to the biopile and to calculate the volume of supplemental nutrients required. Soil pH was found to be within an acceptable range.
- The soil descriptions will be used to provide guidance in the dewatering process and the likely soil expansion that will be encountered on surface.

Tables

Table 1
COC Concentrations in Soil
Pre-Design Soil Investigation
Building 5 Area

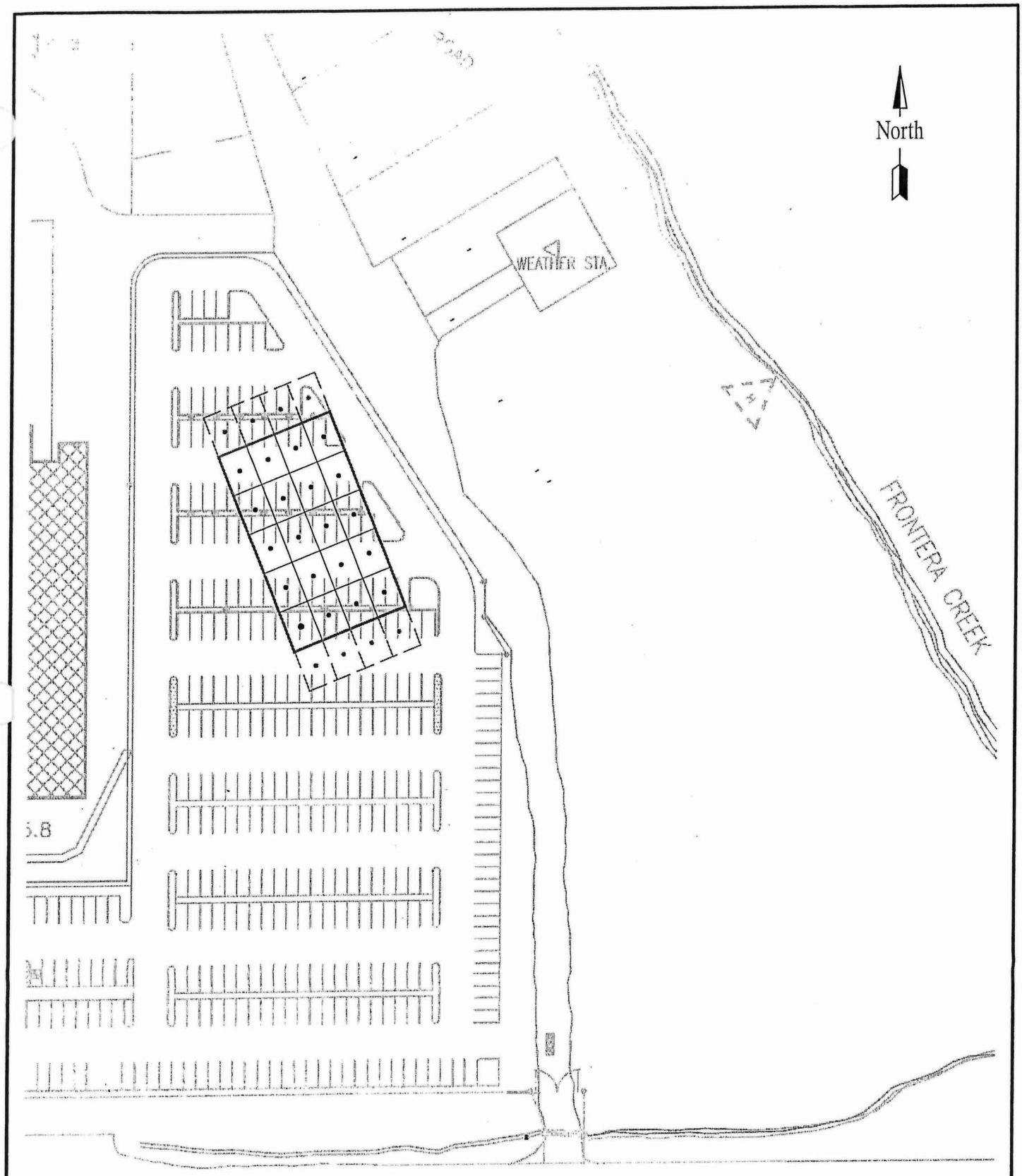
Sample ID	Depth (ft)	PID (ppm)	Ethylbenzene	MIBK	Xylene (Total)
Reporting units are in ug/kg.					
SOIL SAMPLES COLLECTED WHERE LOW PIDs OBSERVED					
PD-1	5-5.5	0	3,780	300 U	69.8 J
PD-2	4.5-5	0	84,100	370 U	152
PD-3	6.5-7	0	10,500	330 U	4,930
PD-4	6.5-7	0	18,500	350 U	38,900
PD-5	8-8.5	0	25.2	6.2 U	18.6
PD-6	8-8.5	0	1,620	460 U	5,020
PD-7	8-8.5	0	1,540	320 U	4,610
PD-8	6.5-7	0	6,250	320 U	251
PD-9	2-2.5	7	8,510	340 U	130 U
PD-10	5-5.5	0	1,300	340 U	231
PD-11	6.5-7	0	159	350 U	704
PD-12	8-8.5	0	626	370 U	1,500
PD-13	8-8.5	0	1.1 U	5.3 U	2.1 U
PD-14	5.5-6	0	11,600	320 U	45.4 J
PD-14	5.5-6 (dup)	0	13,400	410 U	69.5 J
PD-15	5-5.5	12	25,200	790 U	728
PD-16	5-5.5	0	36,000	1700 U	1,430
PD-17	8-8.5	0	60.3 J	440 U	174 J
PD-18	8-8.5	0	49.0 J	350 U	118 J
PD-19	8-8.5	0	1.7	5.8 U	5.2
PD-20	8-8.5	0	165	6.0 U	420
PD-21	4-4.5	0	0.88 J	4.9 U	1.8 J
PD-22	4.5-5	0	7.7	9.2	25.7
PD-23	5.5-6	0	61 U	300 U	56.3 J
PD-24	4.5-5	0	70 U	350 U	150
PD-25	6.5-7	0	8,090	390 U	122 J
PD-26	6.5-7	0	24,100	330 U	206
PD-26	6.5-7 (dup)	0	21,400	330 U	157
PD-27	6-6.5	0	33,700	300 U	53.7 J
PD-28	8-8.5	0	2,660	280 U	4,760
SOIL SAMPLES COLLECTED WHERE HIGH PIDs OBSERVED					
PD-5	10-10.5	905	354,000	17,000 U	1,150,000
PD-20	9-9.5	750	610,000	37,000 U	2,030,000
PD-23	9-9.5	9783	1,660,000	29,900 J	4,980,000

NOTES:
EPA Soil Screening Level (SSL) for migration to groundwater pathway for MIBK is 19,000 ug/kg
EPA SSL for migration to groundwater pathway for Xylene is 190,000 ug/kg.
EPA Region III SSL for migration to groundwater pathway for Ethylbenzene is 13,000 ug/kg.
Any values exceeding SSLs are shown shaded.

Table
Nutrient Concentrations in Soil
Pre-Design Soil Investigation
Building 5 Area

Soil Boring ID	Sample Depth (ft)	Total Carbon	Nitrogen, Total	Phosphorus, Total
Reporting units are in mg/kg.				
PD-5	9.5-10.5	3,120	331	66.4
PD-20	8.5-9.5	<1,300	93.8	266
PD-23	9-10	1,900	77.0	185

Figures



Scale	Date
1" = 90'	April 2005

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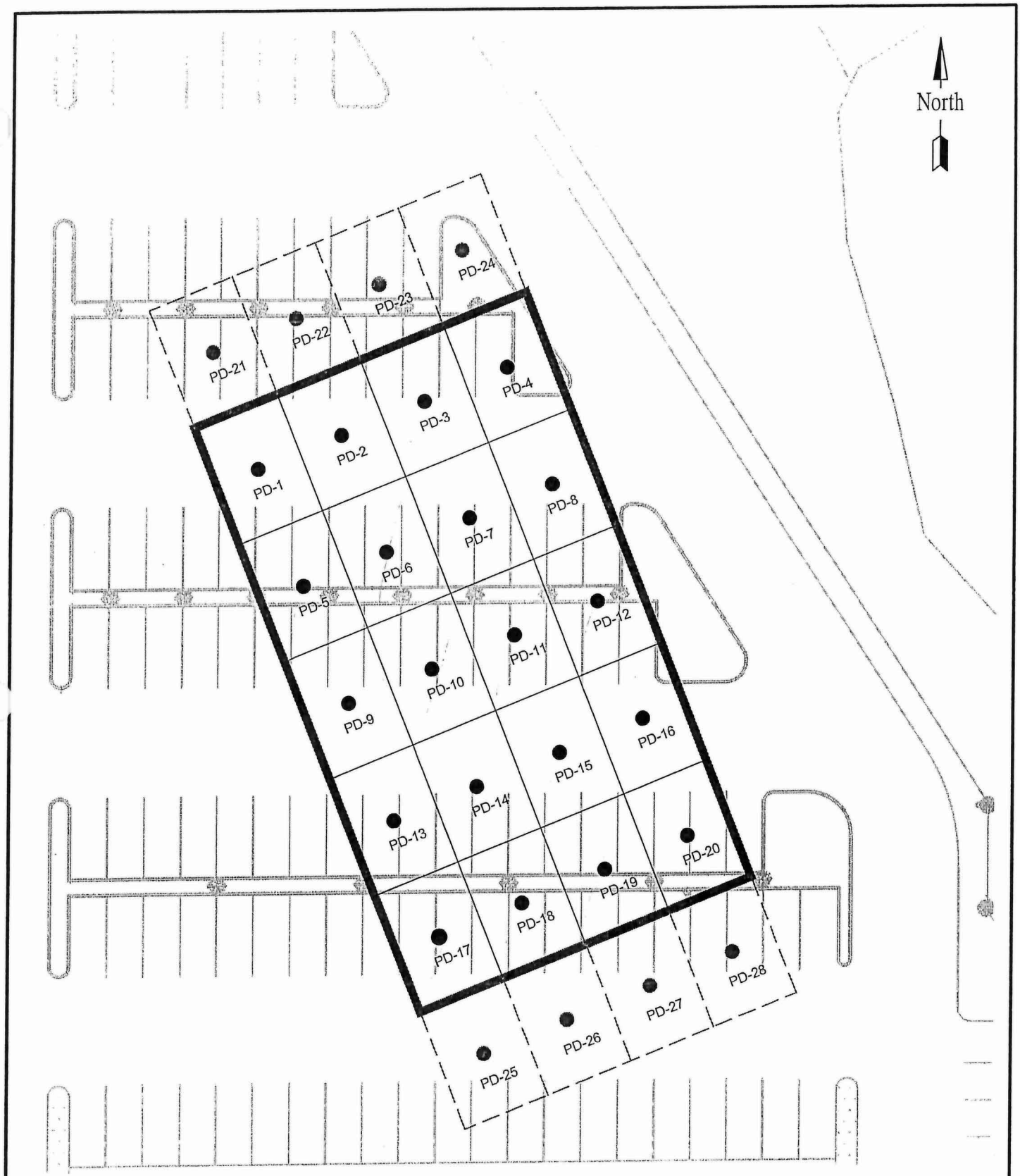
Figure 1

Site Plan of Building 5 Area Showing Location of Area A

Bristol-Myers Squibb Manufacturing Company
Humacao, Puerto Rico



Scale	Date
1" = 30'	April 2005

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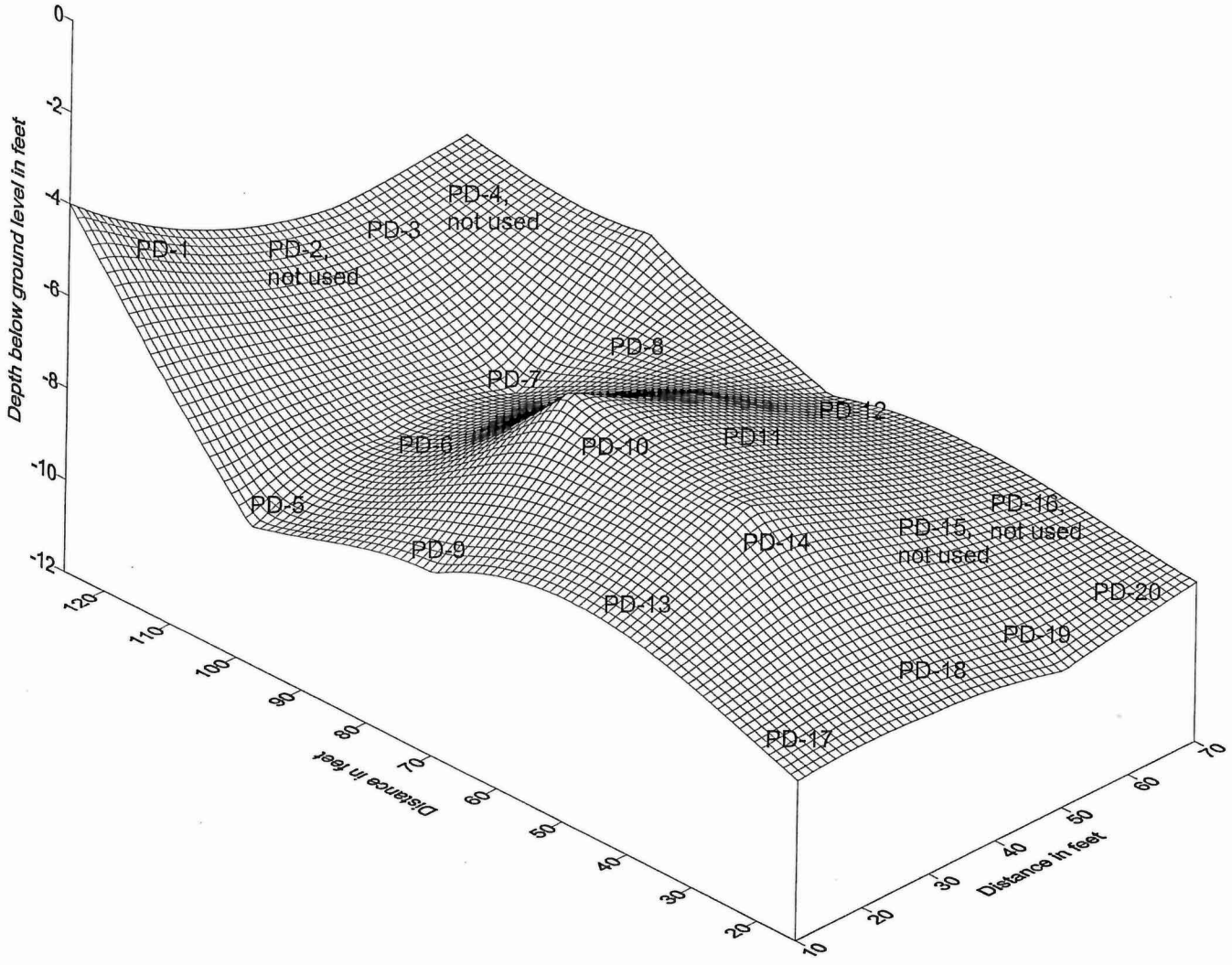
Figure 2

Detailed Plan of Area A
Showing Soil Boring Locations

Bristol-Myers Squibb Manufacturing Company
Humacao, Puerto Rico

Figure 3 - 3 Dimensional Line Plot Showing Depth of Clean Horizon Below Ground Level



Note: This figure includes data from PD-1 to PD-20 excluding PD-2, PD-4, PD-15 and PD-16 (the sample values were above SSLs)

Appendix A

Borehole Logs

AMAI 110 Corporate Park Drive White Plains, New York 10604	SOIL BORING LOG	BORING NUMBER PD - 1

PROJECT NAME:	Bristol-Myers Squibb	LOCATION:	Humacao, PR	START DATE:	3.7.05
PROJECT NO:	BM15.01:02	CONTRACTOR:	GeoEnviroTech	FINISH DATE:	3.7.05
SAMPLER TYPE/DIAMETER (IN):	Macro - core/ 2 inch	BORING METHOD:	Direct Push	DRILLER:	Juan, Abraham
TOTAL DEPTH DRILLED (FT):	12	DEPTH TO WATER (FT):		LOGGED BY:	Mike Stein

DEPTH FROM SURFACE (FEET)	RECOVERY (INCHES)	PID (ppm)	SAMPLE DESIGNATION	USCS CODE	LITHOLOGIC DESCRIPTION AND COMMENTS
1	48	0.0			(0-6") Dark brown sandy SILT/asphalt, tight, stiff, little gravel fragments, dry (6-18") Brown/yellowish brown silty CLAY, stiff to soft, slightly moist
2		0.0			(18-36") dark brown sandy silty CLAY, slightly moist, soft, gravel fragments to 1" (sub-angular)
3		0.0			
4		0.0			(36-48") Light brown/ greenish brown sandy silty CLAY, soft some sub-angular gravel to 1"
5	20	0.0 0.0			(48-52") greenish gray sandy silty CLAY, soft, slightly moist
6		0.0 0.0	(5-5.5)		(52-68") light brown/ greenish gray sandy silty CLAY, soft (Cobble at tip)
7					(68-96") No Recovery
8					cobble to 2" at bottom tip, wet at 8 ft
9	48	196 1776			(96-108") Dark brown CLAY, soft, moist, trace sand, trace silt
10		570 831			(108-116") Orange/ Brown CLAY. Soft, moist, trace sand, trace silt (116-128") Lt Gray sandy CLAY. Soft, moist
11		7200 915			(128-144") Reddish brown silty SAND, soft, wet, sand is fine-coarse grained
12		824 1374			(142-144") No Recovery
					End of Boring at 12 ft 10:40 - DTP=7.62, DTW=7.63

AMAI 110 Corporate Park Drive White Plains, New York 10604	SOIL BORING LOG	BORING NUMBER PD - 2

PROJECT NAME:	Bristol-Myers Squibb	LOCATION:	Humacao, PR	START DATE:	3.7.05
PROJECT NO:	BM15.01.02	CONTRACTOR:	GeoEnviroTech	FINISH DATE:	3.7.05
SAMPLER TYPE/DIAMETER (IN):	Macro - core/ 2 inch	BORING METHOD:	Direct Push	DRILLER:	Juan, Abraham
TOTAL DEPTH DRILLED (FT):	12	DEPTH TO WATER (FT):		LOGGED BY:	Mike Stein

DEPTH FROM SURFACE (FEET)	RECOVERY (INCHES)	PID (ppm)	SAMPLE DESIGNATION	USCS CODE	LITHOLOGIC DESCRIPTION AND COMMENTS
1	48	0.0			(0-4") Asphalt, tight soil, dry (4-6") Reddish brown gravel/sandy Silt
2		0.0			(6-22") Dark brown clayey sandy SILT, stiff to soft, slightly moist little gravel
3		0.0			(22-48") Dark brown silty CLAY/ clayey SILT, stiff to soft, slightly moist, trace gravel to 1/2"
4		0.0			
5	48	0.0 0.0	(4.5-5)		(48-60") Greenish gray silty CLAY,soft, trace gravel
6		5986 4699			(60-72") Dark brown silty CLAY, soft, plastic, slightly moist
7		8839 414			(72-92") brown silty CLAY, more silty than above, soft, slightly moist to moist
8		4493 7168			(92-96") Light brown fine SAND, soft, wet
9	46	1328 928			(96-102") Brown silty CLAY, soft, moist (102-114") Gray fine-coarse SAND, saturated, soft
10		2962 4026			(114-142") Dark brown fine-coarse SAND, saturated, soft
11		9594 356			
12		46 0.0			(142-144") No Recovery
					End of Boring at 12 ft 10:40 Unable to read DTW, well collapsed, driller reamed borehole 12:00 DTP=7.39, DTW=7.40

AMAI 110 Corporate Park Drive White Plains, New York 10604	SOIL BORING LOG	BORING NUMBER PD - 3

PROJECT NAME:	Bristol-Myers Squibb	LOCATION:	Humacao, PR	START DATE:	3.7.05
PROJECT NO:	BM15.01.02	CONTRACTOR:	GeoEnviroTech	FINISH DATE:	3.7.05
SAMPLER TYPE/DIAMETER (IN):	Macro - core/ 2 inch	BORING METHOD:	Direct Push	DRILLER:	Juan, Abraham
TOTAL DEPTH DRILLED (FT):	12	DEPTH TO WATER (FT):		LOGGED BY:	Mike Stein

DEPTH FROM SURFACE (FEET)	RECOVERY (INCHES)	PID (ppm)	SAMPLE DESIGNATION	USCS CODE	LITHOLOGIC DESCRIPTION AND COMMENTS
1	39	0.0			(0-6") Asphalt/ stiff soil, dark brown, some gravel (6-9") Reddish/ orange brown silty SAND/Gravel
2		0.0			(9-32") Brown silty SAND, stiff, slightly moist, little gravel
3		0.0			(32-39") Same as Above, soil is greenish brown
4		0.0			(39-48") No Recovery
5	48	0.0			(48-60") Brown/Greenish brown sandy, silty CLAY, soft, slightly moist, trace gravel
6		0.0			(60-72") Dark brown silty CLAY,soft, slightly moist
7		0.0 0.0	(6.5-7)		(72-93") Brown silty CLAY, soft, moist, trace sand
8		12.9 1240			(93-96") Yellowish brown silty CLAY,more silty than above, moist, soft, trace sand
9	44	3666 7168			(96-120") Orangeish Brown with gray mottles, silty CLAY, trace sand, soft, moist
10		5739 5837			
11		9109 2296			(120-130") Same as Above, softer than above, more sand
12		243 6543			(130-140") Silty SAND, yellowish brown, soft, wet (140-144") No Recovery
					End of Boring at 12ft. 12:05 DTW = 7.51

AMAI 110 Corporate Park Drive White Plains, New York 10604	SOIL BORING LOG	BORING NUMBER PD - 4

PROJECT NAME:	Bristol-Myers Squibb	LOCATION:	Humacao, PR	START DATE:	3.7.05
PROJECT NO:	BM15.01.02	CONTRACTOR:	GeoEnviroTech	FINISH DATE:	3.7.05
SAMPLER TYPE/DIAMETER (IN):	Macro - core/ 2 inch	BORING METHOD:	Direct Push	DRILLER:	Juan, Abraham
TOTAL DEPTH DRILLED (FT):	12	DEPTH TO WATER (FT):		LOGGED BY:	Mike Stein

DEPTH FROM SURFACE (FEET)	RECOVERY (INCHES)	PID (ppm)	SAMPLE DESIGNATION	USCS CODE	LITHOLOGIC DESCRIPTION AND COMMENTS
1	46	0.0			(0-6") Orange Brown sandy SILT/ gravel, dry, stiff (6-30") Brown/greenish Brown silty SAND, some gravel, soft, slightly moist, sub-angular to 1 1/2"
2		0.0			
3		0.0			(30-46") greenish brown sandy silty CLAY, stiff, slightly moist, some gravel, sub-angular to 1"
4		0.0			(46-48") No Recovery
5	48	0.0			(48-54") Same as Above (30-46) (54-80") Brown silty CLAY, trace sand, soft, plastic, moist
6		0.0			
7		0.0 0.0	(6.5-7)		(80-96") Light brown/ yellowish brown silty CLAY, trace sand, soft plastic, moist
8		767/ OR 6241			
9	48	2201 5088			(96-102") dark brown silty CLAY, soft, moist (102-120") Yellowish brown with gray mottles, silty CLAY, soft, moist, trace sand
10		948 7341			
11		158 8			(120-136") Yellowish brown silty SAND, soft, wet, fine to medium grained sand
12		1104 420			(136-144") Reddish and grayish brown silty SAND, soft, wet, fine to coarse grained sand
					End of Boring at 12ft. Boring located in strip adjacent to asphalt parking lot. 11:45 DTW = 7.43

AMAI 110 Corporate Park Drive White Plains, New York 10604	SOIL BORING LOG	BORING NUMBER PD - 5

PROJECT NAME:	Bristol-Myers Squibb	LOCATION:	Humacao, PR	START DATE:	3.7.05
PROJECT NO:	BM15.01.02	CONTRACTOR:	GeoEnviroTech	FINISH DATE:	3.7.05
SAMPLER TYPE/DIAMETER (IN):	Macro - core/ 2 inch	BORING METHOD:	Direct Push	DRILLER:	Juan, Abraham
TOTAL DEPTH DRILLED (FT):	12	DEPTH TO WATER (FT):		LOGGED BY:	Mike Stein

DEPTH FROM SURFACE (FEET)	RECOVERY (INCHES)	PID (ppm)	SAMPLE DESIGNATION	USCS CODE	LITHOLOGIC DESCRIPTION AND COMMENTS
1	42	0.0			(0-6") Asphalt/ dry, stiff, soil, dark brown, sandy SILT (6-24") Dark brown silty SAND/sandy SILT, slightly moist, stiff, some gravel, sub-angular to 1/2"
2		0.0			
3		0.0			(24-42") Dark brown/greenish brown sandy, clayey SILT, stiff to soft slightly moist, little gravel
4		0.0			(42-48") No Recovery
5	16	0.0			(48-60") Dark brown with green mottles sandy clayey SILT, slightly moist, slightly plastic, soft
6		0.0			(60-64") Dark brown silty CLAY, plastic, soft, moist
7					(64-96") No Recovery
8					
9	48	0.0 0.0	(8-8.5)		(96-120") Same as above (60-64)
10		556 1254			
11		905 767/ OR	(10-10.5)		(120-126") Same as Above, color is yellowish brown/brown (126-144") Greyish brown/ reddish brown SAND, trace silt fine to coarse sand, wet, soft
12		219 0.0			
					End of Boring at 12ft. 13:10 Collecting multi-soil sample, PD - 5 (9.5-10.5) Checking PID / Headspace of sample = Overrange - up to 9,000 ppm 13:20 DTW = 7.73

AMAI 110 Corporate Park Drive White Plains, New York 10604	SOIL BORING LOG	BORING NUMBER PD - 6

PROJECT NAME:	Bristo - Myers Squibb	LOCATION:	Humacao, PR	START DATE:	3.7.05
PROJECT NO:	BM15.01.02	CONTRACTOR:	GeoEnviroTech	FINISH DATE:	3.7.05
SAMPLER TYPE/DIAMETER (IN):	Macro - core/ 2 inch	BORING METHOD:	Direct Push	DRILLER:	Juan, Abraham
TOTAL DEPTH DRILLED (FT):	12	DEPTH TO WATER (FT):		LOGGED BY:	Mike Stein

DEPTH FROM SURFACE (FEET)	RECOVERY (INCHES)	PID (ppm)	SAMPLE DESIGNATION	USCS CODE	LITHOLOGIC DESCRIPTION AND COMMENTS
1	38	0.0			(0-6") Asphalt/ tight dark brown sandy SILT, gravel (6-8") GRAVEL/ orange/brown sandy SILT, dry, stiff
2		0.0			(8-20") Brown silty SAND, slightly moist, soft, some sub-angular gravel
3		0.0			(20-38") Greenish brown clayey SILT, trace sand, some gravel, sub-angular to 2"
4		0.0			(38-48") No Recovery
5	27	0.0			(48-75") Dark brown silty CLAY, soft, moist, plastic, trace gravel
6		0.0			
7		0.0			(75-96") No Recovery
8					
9	48	0.0 702	(8-8.5)		(96-102") Same as above (48-75) (102-112") Same as Above, color is yellowish brown, with grey mottles
10		767/ OR 4064			(112-120") Yellowish Brown/ Grey CLAY and brown silty SAND stiff, moist
11		1555 9354			(120-144") Greyish Brown to reddish brown fine to coarse SAND wet, soft
12		205 0.0			
					End of Boring at 12ft 14:40 DTW = 6.21

AMAI 110 Corporate Park Drive White Plains, New York 10604	SOIL BORING LOG	BORING NUMBER PD - 7

PROJECT NAME: Bristol - Myers Squibb
PROJECT NO: BM15.01.02
LOCATION: Humacao, PR
CONTRACTOR: GeoEnviroTech
START DATE: 3.7.05
FINISH DATE: 3.7.05
DRILLER: Juan, Abraham
LOGGED BY: Mike Stein
SAMPLER TYPE/DIAMETER (IN): Macro - core/ 2 inch
TOTAL DEPTH DRILLED (FT): 12
BORING METHOD: Direct Push
DEPTH TO WATER (FT):

DEPTH FROM SURFACE (FEET)	RECOVERY (INCHES)	PID (ppm)	SAMPLE DESIGNATION	USCS CODE	LITHOLOGIC DESCRIPTION AND COMMENTS
1	48	0.0			(0-6") Asphalt/ gravel (6-12") GRAVEL/ orange brown sandy SILT, dry
2		0.0			(12-24") Greyish brown silty SAND, some gravel to 1", sub-angular
3		0.0			(24-48") Dark gray silty SAND, some gravel to 1", sub-angular
4		0.0			
5	48	0.0			(48-52") light brown, sandy, silty CLAY. Dry to slightly moist, very hard sub-angular lithic/ quartz fragments.
6		0.0			(52-96") dark brown and gray, sandy silty CLAY, stiff, slightly moist to moist sub-angular, lithic and quartz fragments, roots
7		0.0			
8		0.0			
9	48	0.0 0.0	(8-8.5)		(98-104") dark brown and gray, sandy silty CLAY, stiff, slightly moist to moist, sub-angular, lithic and quartz fragments, roots
10		767/ OR 2599			(104-138") yellowish brown / reddish brown, sandy, silty CLAY, stiff to soft, moist to wet (bottom foot) locally sandier
11		645 1718			
12		182 0.0			(138-144") gray/reddish gray, SAND, loose, fine to medium grained, sub-angular pyrite and lithic fragments saturated/wet
					End of Boring at 12ft 15:25 DTW = 7.66

AMAI 110 Corporate Park Drive White Plains, New York 10604	SOIL BORING LOG	BORING NUMBER PD - 8

PROJECT NAME:	Bristol - Myers Squibb	LOCATION:	Humacao, PR	START DATE:	3.07.05
PROJECT NO:	BM15.01.02	CONTRACTOR:	GeoEnviroTech	FINISH DATE:	3.07.05
SAMPLER TYPE/DIAMETER (IN):	Macro-core/ 2 inch	BORING METHOD:	Direct Push	DRILLER:	Juan, Abraham
TOTAL DEPTH DRILLED (FT):	12	DEPTH TO WATER (FT):		LOGGED BY:	Mike Stein

DEPTH FROM SURFACE (FEET)	RECOVERY (INCHES)	PID (ppm)	SAMPLE DESIGNATION	USCS CODE	LITHOLOGIC DESCRIPTION AND COMMENTS
1	40	0.0			(0-6") Asphalt (5") and gravel
2		0.0			(6-40") light gray, clayey, silty, sandy GRAVEL / gravelly SAND, loose, slightly moist. At top 8" limestone fragments observed. (backfill)
3		0.0			
4		0.0			(40-48") No Recovery
5		0.0			(48-64") Brown, silty CLAY, locally sandy, stiff and soft, sub-angular lithic fragments, roots (64-86") Light Brown/olive brown, silty CLAY, stiff, slightly moist, some roots observed
6		0.0			(64-86") Light Brown/olive brown, silty CLAY, stiff, slightly moist, some roots observed
7		0.0 0.0	(6.5-7)		
8		737 9611			(86-94") yellowish brown, silty SAND,soft, loose, moist, roots (4" long) Medium to coarse, grained sand, sub-angular (94-96") No Recovery
9	48	1066 9315			(96-132") Reddish / yellowish brown, sandy, silty CLAY / silty, clayey SAND, stiff to slightly moist, fine to medium grained quartz / lithic sand.
10		7168 9953			
11		271 954			
12		1855 2418			(132-144") Dark gray and red, SAND, wet to saturated, loose, fine to coarse grained, sub-angular quartz, mica and lithic fragments
					End of Boring at 12ft. 15:25 DTW = 7.26

AMAI 110 Corporate Park Drive White Plains, New York 10604	SOIL BORING LOG	BORING NUMBER PD - 9

PROJECT NAME: Bristol - Myers Squibb
PROJECT NO: BM15.01.02
LOCATION: Humacao, PR
CONTRACTOR: GeoEnviroTech
START DATE: 3.08.05
FINISH DATE: 3.08.05
DRILLER: Juan, Abraham
LOGGED BY: Mike Stein
SAMPLER TYPE/DIAMETER (IN): Macro-core/ 2 inch
BORING METHOD: Direct Push
TOTAL DEPTH DRILLED (FT): 12
DEPTH TO WATER (FT):

DEPTH FROM SURFACE (FEET)	RECOVERY (INCHES)	PID (ppm)	SAMPLE DESIGNATION	USCS CODE	LITHOLOGIC DESCRIPTION AND COMMENTS
1	47	0.0 0.0			(0-6") Asphalt and gravel, dry, tight (6-24") greenish brown silty SAND, some gravel (to 3/4"), dry to slightly moist
2		0.0 0.0			
3		7 108	(2-2.5)		(24-44") Greenish brown silty, sandy CLAY, stiff slightly, moist, trace gravel
4		113 703			(44-47") Dark brown asphalt like sandy SILT, dry (47-48") No Recovery
5	47	122 36			(48-62") Greenish gray, sandy, silty CLAY, wood fragments, slightly moist soft, slightly plastic
6		50 142			(62-95") Dark brown, silty CLAY, soft, plastic, slightly moist, more clayey and less dark at 7-8 ft
7		79 36			
8		45 55			(95-96") No Recovery
9	30	22 4859			(96-104") Same as above, moist (100-112") Light brown and gray, sandy CLAY, moist, soft
10		3887 9571			(112-126") Pinkish gray (112-119") to brownish gray (119-126") SAND(fine to coarse), trace silt, trace clay, wet, soft
11		27			(126-144") No Recovery
12					
					End of Boring at 12ft. 9:20 DTW = 7.69 Note: Background PID reading = 2.4

AMAI 110 Corporate Park Drive White Plains, New York 10604	SOIL BORING LOG	BORING NUMBER PD - 10

PROJECT NAME:	Bristol - Myers Squibb	LOCATION:	Humacao, PR	START DATE:	3.08.05
PROJECT NO:	BM15.01.02	CONTRACTOR:	GeoEnviroTech	FINISH DATE:	3.08.05
SAMPLER TYPE/DIAMETER (IN):	Macro-core/ 2 inch	BORING METHOD:	Direct Push	DRILLER:	Juan, Abraham
TOTAL DEPTH DRILLED (FT):	12	DEPTH TO WATER (FT):		LOGGED BY:	Mike Stein

DEPTH FROM SURFACE (FEET)	RECOVERY (INCHES)	PID (ppm)	SAMPLE DESIGNATION	USCS CODE	LITHOLOGIC DESCRIPTION AND COMMENTS
1	48	0.0			(0-8") Asphalt and gravel, tight, dry (8-26") Brownish gary clayey, silty SAND, some gravel, soft,slightly moist
2		0.0			
3		0.0			(26-48") Dark gray silty CLAY / clayey SILT, little sand, some gravel, sub-angular (to 1")
4		0.0			
5	30	0.0 0.0			(48-54") Same as Above (54-66") Dark brown, silty CLAY, soft, plastic, moist
6		0.0 374	(5-5.5)		(66-74") Dark brown silty CLAY / clayey SILT, stiffer than above, moist
7		1266			(74-78") Grayish brown silty SAND (fine), wet, soft
8					(78-96") No Recovery
9	48	3299 767/OR			(96-104") Brownish gray, sandy, silty CLAY, wet to saturated, soft.
10		4393 6812			(104-114") Brownish gray, silty SAND (fine), saturated, soft (114-126") Brownish gray, SAND (fine to coarse), wet to saturated
11		219 180 89			(126-135") Same as above, color is dark gray
12		31 55			(135-144") Same as Above, color is pinkish
					End of Boring at 12ft. 9:21 DTW = 7.57

AMAI 110 Corporate Park Drive White Plains, New York 10604	SOIL BORING LOG	BORING NUMBER PD - 11

PROJECT NAME:	Bristol - Myers Squibb	LOCATION:	Humacao, PR	START DATE:	3.08.05
PROJECT NO:	BM15.01.02	CONTRACTOR:	Geo EnviroTech	FINISH DATE:	3.08.05
SAMPLER TYPE/DIAMETER (IN):	Macro - core / 2inch	BORING METHOD:	Direct Push	DRILLER:	Juan, Abraham
TOTAL DEPTH DRILLED (FT):	12	DEPTH TO WATER (FT):		LOGGED BY:	Mike Stein

DEPTH FROM SURFACE (FEET)	RECOVERY (INCHES)	PID (ppm)	SAMPLE DESIGNATION	USCS CODE	LITHOLOGIC DESCRIPTION AND COMMENTS
1	42	0.0			(0-8") Asphalt and gravel, dry, tight (8-14") Orange-brown, silty CLAY and gravel, stiff
2		0.0			(14-36") Gray and brown, silty SAND, some gravel fragments to (3/4")
3		0.0			
4		0.0			(36-42") Dark gray, silty CLAY, stiff, slightly plastic, slightly moist (42-48") No Recovery
5	48	0.0			(48-54") Same as Above (36-42)
6		0.0			(54-74") Dark brown, silty CLAY, plastic, moist, soft
7		0.0 0.0	(6.5-7)		(74-96") Brown with green and gray mottles, silty CLAY, stiff, slightly plastic, moist
8		21 7637			
9	30	0.0 441			(96-102") Brown with green and grey mottles, silty CLAY, stiff, slightly plastic, moist (102-108") Brown/ light brown, sandy silty CLAY, trace gravel, stiff, moist, FPH on macro-core at (105-108")
10		767/OR 8531			(108-117") Light brown, silty SAND, trace clay, saturated, soft, FPH on macro-core at (108-111")
11		374			(117-126") Dark grey, silty SAND (fm), wet, soft
12					(126-144") No Recovery
					End of Boring at 12ft. 10:40 DTW = 7.82 12:40 DTW = 7.77

AMAI 110 Corporate Park Drive White Plains, New York 10604	SOIL BORING LOG	BORING NUMBER PD - 12

PROJECT NAME:	Bristol - Myers Squibb	LOCATION:	Humacao, PR	START DATE:	3.08.05
PROJECT NO:	BM15.01.02	CONTRACTOR:	Geo EnviroTech	FINISH DATE:	3.08.05
SAMPLER TYPE/DIAMETER (IN):	Macro - core / 2inch	BORING METHOD:	Direct Push	DRILLER:	Juan, Abraham
TOTAL DEPTH DRILLED (FT):	12	DEPTH TO WATER (FT):		LOGGED BY:	Mike Stein

DEPTH FROM SURFACE (FEET)	RECOVERY (INCHES)	PID (ppm)	SAMPLE DESIGNATION	USCS CODE	LITHOLOGIC DESCRIPTION AND COMMENTS
1	48	0.0			(0-9") Asphalt and gravel, tight, dry (9-15") Orange-brown, silty CLAY and gravel, sub-angular(to 11/2") soft, slightly moist
2		0.0			(15-34") Greenish gray, clayey, sandy SILT, stiff, slightly moist, some gravel fragments (to 11/4")
3		0.0			(34-40") Greenish brown, sandy, silty CLAY, stiff, slightly moist, some gravel fragments (to 3/4")
4		0.0			(40-48") reddish brown, sandy, silty CLAY, stiff, slightly moist sub-rounded gravel (to 11/4")
5	40	0.0			(48-88") dark brown to brown, silty CLAY, moist, soft, plastic
6		0.0			
7		0.0			
8		0.0			(88-96") No Recovery
9	48	0.0 5267	(8-8.5)		(96-102") dark brown to brown, silty CLAY, moist, soft, plastic (102-126") yellowish brown with grey mottles, silty CLAY, trace fine sand, slightly plastic, moist, soft
10		4154 6107			
11		8597 199			(126-132") Same as above, color is greenish brown with grey mottles
12		16 0.0			(132-144") Grey to reddish brown, silty fine SAND, wet, soft
					End of Boring at 12ft. Offset location due to refusal 12:40 DTW =8.00

AMAI 110 Corporate Park Drive White Plains, New York 10604	SOIL BORING LOG	BORING NUMBER PD - 13

PROJECT NAME:	Bristol - Myers Squibb	LOCATION:	Humacao, PR	START DATE:	3.08.05
PROJECT NO:	BM15.01.02	CONTRACTOR:	Geo EnviroTech	FINISH DATE:	3.08.05
SAMPLER TYPE/DIAMETER (IN):	Macro - core / 2inch	BORING METHOD:	Direct Push	DRILLER:	Juan, Abraham
TOTAL DEPTH DRILLED (FT):	12	DEPTH TO WATER (FT):		LOGGED BY:	Mike Stein

DEPTH FROM SURFACE (FEET)	RECOVERY (INCHES)	PID (ppm)	SAMPLE DESIGNATION	USCS CODE	LITHOLOGIC DESCRIPTION AND COMMENTS
1	40	0.0			(0-6") Asphalt and gravel, dry, tight (6-12") greenish grey gravelly, clayey, sandy SILT, soft, slightly moist sub-angular (to 1")
2		0.0			(12-32") greenish brown clayey SILT, stiff, slightly moist, some gravel fragments, sub-angular to 11/4"
3		0.0			
4		0.0			(32-40") Same as Above, color is brown, little gravel (40-48") No Recovery
5	12	0.0			(48-60") dark brown silty CLAY, soft, plastic, slightly moist
6		0.0			(60-96") No Recovery
7					
8					
9	48	0.0 0.0	(8-8.5)		(96-105") dark brown silty CLAY, soft, plastic, slightly moist (105-107") greyish brown sandy SILT, saturated
10		0.0			(107-120") Same as (96-105"), moist
11		0.0			(120-132") Dark brown silty SAND, wet, soft
12		0.0			(132-140") yellowish brown and grey, silty CLAY and medium to coarse SAND, soft, wet (140-144") pinkish grey, medium to coarse SAND, wet, soft
					End of Boring at 12ft. 12:40 DTW =7.41

AMAI 110 Corporate Park Drive White Plains, New York 10604	SOIL BORING LOG	BORING NUMBER PD - 14

PROJECT NAME:	Bristol - Myers Squibb	LOCATION:	Humacao, PR	START DATE:	3.08.05
PROJECT NO:	BM15.01.02	CONTRACTOR:	Geo EnviroTech	FINISH DATE:	3.08.05
SAMPLER TYPE/DIAMETER (IN):	Macro - core / 2inch	BORING METHOD:	Direct Push	DRILLER:	Juan, Abraham
TOTAL DEPTH DRILLED (FT):	12	DEPTH TO WATER (FT):		LOGGED BY:	Mike Stein

DEPTH FROM SURFACE (FEET)	RECOVERY (INCHES)	PID (ppm)	SAMPLE DESIGNATION	USCS CODE	LITHOLOGIC DESCRIPTION AND COMMENTS
1	48	0.0			(0-7") Asphalt and gravel, tight, dry (7-12") Light brown sandy SILT, gravel fragments (to 3/4")
2		0.0			(12-20") Greenish grey silty SAND, stiff, slightly moist, some gravel
3		0.0			(20-34") Greenish brown silty CLAY and gravel, moist, stiff, sub-rounded to sub-angular 1" fragments
4		0.0			(34-48") dark brown / greenish brown clayey SILT, moist, stiff little gravel
5	40	0.0			(48-72") Dark brown silty CLAY, soft, moist, plastic
6		0.0 0.0	(5.5-6)		
7		137 9356			(72-84") Brown silty CLAY / clayey SILT, trace sand, stiff, moist, slightly plastic
8		1105			(84-88") Grey silty fine SAND, wet, soft (88-96") No Recovery
9	48	4948 9499			(96-100") Greyish brown sandy SILT, wet, soft (100-126") Greyish brown silty fine SAND, soft, saturated
10		4393 767/OR			
11		767/OR 1010			(126-144") Pinkish grey, fine to coarse SAND, wet, soft
12		31 40			
					End of Boring at 12ft. 12:40 DTW =7.09

AMAI 110 Corporate Park Drive White Plains, New York 10604	SOIL BORING LOG	BORING NUMBER PD - 15

PROJECT NAME:	Bristol - Myers Squibb	LOCATION:	Humacao, PR	START DATE:	3.08.05
PROJECT NO:	BM15.01.02	CONTRACTOR:	Geo EnviroTech	FINISH DATE:	3.08.05
SAMPLER TYPE/DIAMETER (IN):	Macro - core / 2inch	BORING METHOD:	Direct Push	DRILLER:	Juan, Abraham
TOTAL DEPTH DRILLED (FT):	12	DEPTH TO WATER (FT):		LOGGED BY:	Mike Stein

DEPTH FROM SURFACE (FEET)	RECOVERY (INCHES)	PID (ppm)	SAMPLE DESIGNATION	USCS CODE	LITHOLOGIC DESCRIPTION AND COMMENTS
1	41	0.0			(0-8") Asphalt and gravel, tight, dry (8-17") Fill: Orange to greenish grey, clayey sandy SILT, soft, slightly moist, some gravel, angular to 1"
2		0.0			(17-38") Greenish grey clayey SILT, stiff, slightly moist, some gravel, sub-angular to 1"
3		0.0			
4		12			(38-41") dark brown silty CLAY, soft, slightly moist, plastic, angular gravel to 1" (41-48") No Recovery
5	48	0.0			(48-66") dark brown silty CLAY, plastic, moist, soft
6		12 50	(5-5.5)		(66-96") Same as above, color is brown with yellowish brown and grey mottles
7		74 1888			
8		6425 7274			
9	45	0.0 1022			(96-110") brown with yellowish brown and grey mottles, silty CLAY, plastic, moist, soft
10		7575 5505			(110-113") Grey silty SAND, moist, soft (113-122") Light brown silty CLAY, soft, plastic, with yellowish brown mottles, moist
11		2127 127			(122-129") Brown silty SAND, moist, soft
12		0.0 0.0			(129-141") Grey and pink SAND (fine to coarse), trace silt, wet, soft (141-144") No Recovery
					End of Boring at 12ft. 14:00 DTW =7.45

AMAI 110 Corporate Park Drive White Plains, New York 10604	SOIL BORING LOG	BORING NUMBER PD - 16

PROJECT NAME:	Bristol - Myers Squibb	LOCATION:	Humacao, PR	START DATE:	3.08.05
PROJECT NO:	BM15.01.02	CONTRACTOR:	Geo EnviroTech	FINISH DATE:	3.08.05
SAMPLER TYPE/DIAMETER (IN):	Macro - core / 2inch	BORING METHOD:	Direct Push	DRILLER:	Juan, Abraham
TOTAL DEPTH DRILLED (FT):	12	DEPTH TO WATER (FT):		LOGGED BY:	Mike Stein

DEPTH FROM SURFACE (FEET)	RECOVERY (INCHES)	PID (ppm)	SAMPLE DESIGNATION	USCS CODE	LITHOLOGIC DESCRIPTION AND COMMENTS
1	48	0.0			(0-6") asphalt and gravel, dry (6-14") Orange brown silty CLAY and gravel, fragments to 1 1/4"
2		0.0			(14-24") Fill: sandy SILT, gravel, soft, loose, slightly moist
3		0.0			(24-44") Greenish brown silty CLAY, stiff, slightly moist, some gravel sub-rounded to (1 1/2")
4		0.0			(44-48") GRAVEL, fragments to (1 1/2")
5	42	0.0			(48-68") Dark brown silty CLAY, plastic, soft, moist
6		0.0 79	(5-5.5)		(68-74") Brown, Same as Above, more silty than above
7		4686 4476			(74-90") Yellowish brown silty CLAY to clayey SILT, moist, soft
8		6700			(90-96") No recovery
9	48	1507 1703			(96-102") dark brown silty CLAY, soft, moist, plastic (102-116") Yellowish brown sandy SILT/silty SAND, trace clay, wet, soft Sand is fine to coarse grained.
10		800/ OR 1374			(116-122") Dark grey fine to coarse SAND, wet, soft
11		84 21			(122-134") Brownish grey, clayey, fine sandy SILT, soft, wet
12		17 0.0			(134-144") Grey to pinkish grey fine SAND, soft, wet
					End of Boring at 12ft. 14:30 DTW =7.37

AMAI 110 Corporate Park Drive White Plains, New York 10604	SOIL BORING LOG	BORING NUMBER PD - 17

PROJECT NAME:	Bristol - Myers Squibb	LOCATION:	Humacao, PR	START DATE:	3.09.05
PROJECT NO:	BM15.01.02	CONTRACTOR:	Geo EnviroTech	FINISH DATE:	3.09.05
SAMPLER TYPE/DIAMETER (IN):	Macro - core / 2inch	BORING METHOD:	Direct Push	DRILLER:	Juan, Abraham
TOTAL DEPTH DRILLED (FT):	12	DEPTH TO WATER (FT):		LOGGED BY:	Mike Stein

DEPTH FROM SURFACE (FEET)	RECOVERY (INCHES)	PID (ppm)	SAMPLE DESIGNATION	USCS CODE	LITHOLOGIC DESCRIPTION AND COMMENTS
1	42	0.0			(0-10") Asphalt and gravel, dry, tight
2		0.0			(10-28") Greyish brown sandy SILT and Gravel, angular to 1" soft, slightly moist
3		0.0			(28-42") Greyish brown sandy clayey SILT, stiff, slightly moist, little gravel
4		0.0			(42-48") No Recovery
5	40	0.0			(48-88") dark brown silty CLAY, soft to stiff, moist, plastic
6		0.0			
7		0.0			
8		0.0			(88-96") No recovery
9	39	0.0 266	(8-8.5)		(96-105") dark brown silty CLAY, soft to stiff, moist, plastic
10		1094 3322			(105-120") Light brown / yellowish brown w/ grey streaks, silty CLAY, soft, moist, 11/2" fragment at (105-106")
11		453 0.0			(120-124") Light brown with green and grey streaks, sandy, clayey SILT, wet
12		0.0			(124-135") reddish brown silty fine SAND, wet, soft (135-144") No Recovery
					End of Boring at 12 ft. 11:00 DTW =7.49

AMAI 110 Corporate Park Drive White Plains, New York 10604	SOIL BORING LOG	BORING NUMBER PD - 18

PROJECT NAME:	Bristol - Myers Squibb	LOCATION:	Humacao, PR	START DATE:	3.09.05
PROJECT NO:	BM15.01.02	CONTRACTOR:	Geo EnviroTech	FINISH DATE:	3.09.05
SAMPLER TYPE/DIAMETER (IN):	Macro - core / 2inch	BORING METHOD:	Direct Push	DRILLER:	Juan, Abraham
TOTAL DEPTH DRILLED (FT):	12	DEPTH TO WATER (FT):		LOGGED BY:	Mike Stein

DEPTH FROM SURFACE (FEET)	RECOVERY (INCHES)	PID (ppm)	SAMPLE DESIGNATION	USCS CODE	LITHOLOGIC DESCRIPTION AND COMMENTS
1	45	0.0			(0-10") Asphalt and gravel, dry, tight
2		0.0			(10-30") Light brown and greyish-greenish brown, sandy SILT, some gravel, sub-angular to 1/2", soft, slightly moist
3		0.0			(30-32") Same as above, trace clay, stiff
4		0.0			(32-45") GRAVEL and crushed ground-calcium carbonate (FILL) (45-48") No Recovery
5	40	0.0			(48-88") Dark brown silty CLAY, soft, plastic, moist
6		0.0			
7		0.0			
8		0.0			(88-96") No recovery
9	40	0.0 58	(8-8.5)		(96-104") Dark brown silty CLAY, soft, plastic, moist (104-108") Brown gravelly, clayey, sandy SILT, soft, loose, slightly moist
10		7461 1025			(108-114") Brown silty CLAY, soft, moist, plastic (114-120") Greyish brown silty SAND, wet, soft
11		3618 218			(120-128") light brown, grey clayey SILT, stiff, moist
12		16			(128-136") Pinkish grey silty SAND, soft, wet, sand is fine to coarse grained (136-144") No Recovery
					End of Boring at 12ft. 11:02 DTW =10.14

AMAI 110 Corporate Park Drive White Plains, New York 10604	SOIL BORING LOG	BORING NUMBER PD - 19

PROJECT NAME:	Bristol - Myers Squibb	LOCATION:	Humacao, PR	START DATE:	3.08.05
PROJECT NO:	BM15.01.02	CONTRACTOR:	Geo EnviroTech	FINISH DATE:	3.08.05
SAMPLER TYPE/DIAMETER (IN):	Macro - core / 2inch	BORING METHOD:	Direct Push	DRILLER:	Juan, Abraham
TOTAL DEPTH DRILLED (FT):	12	DEPTH TO WATER (FT):		LOGGED BY:	Mike Stein

DEPTH FROM SURFACE (FEET)	RECOVERY (INCHES)	PID (ppm)	SAMPLE DESIGNATION	USCS CODE	LITHOLOGIC DESCRIPTION AND COMMENTS
1	48	0.0			(0-9") Asphalt and gravel, stiff, tight, dry
2		0.0			(9-30") Brown sandy SILT, some gravel, dry, soft
3		0.0			
4		0.0			(38-48") Dark greenish brown, sandy, clayey SILT, stiff, slightly moist, sub-angular gravel to 11/2"
5	18	0.0 0.0			(48-58") GRAVEL / Dark brown clayey SILT, soft, slightly moist
6		0.0			(58-66") Dark brown silty CLAY, plastic, stiff, slightly moist
7					(66-96") No Recovery
8					
9	48	0.0 0.0	(8-8.5)		(96-105") Dark brown silty CLAY, soft, plastic, moist (105-108") Greyish brown silty SAND, moist, soft
10		1669 4632			(108-135") Yellowish brown with grey mottles, silty CLAY/ clayey SILT, plastic, soft, moist
11		2500 2681			
12		390 21			(135-140") yellowish brown and grey, silty SAND, wet, soft (140-144") Grey and pinkish grey, silty SAND, wet, soft
					End of Boring at 12ft. 15:30 DTW =8.61

AMAI 110 Corporate Park Drive White Plains, New York 10604	SOIL BORING LOG	BORING NUMBER PD - 20

PROJECT NAME:	Bristol - Myers Squibb	LOCATION:	Humacao, PR	START DATE:	3.08.05
PROJECT NO:	BM15.01.02	CONTRACTOR:	Geo EnviroTech	FINISH DATE:	3.08.05
SAMPLER TYPE/DIAMETER (IN):	Macro - core / 2inch	BORING METHOD:	Direct Push	DRILLER:	Juan, Abraham
TOTAL DEPTH DRILLED (FT):	12	DEPTH TO WATER (FT):		LOGGED BY:	Mike Stein

DEPTH FROM SURFACE (FEET)	RECOVERY (INCHES)	PID (ppm)	SAMPLE DESIGNATION	USCS CODE	LITHOLOGIC DESCRIPTION AND COMMENTS
1	48	0.0			(0-8") Asphalt and gravel, dry, tight
2		0.0			(8-36") Brown and greenish brown, sandy SILT, some gravel, stiff, slightly moist, gravel, sub-angular to 1"
3		0.0			
4		0.0			(36-48") Brown and greenish brown, sandy clayey SILT, some gravel, stiff, slightly moist
5	34	0.0			(48-76") Dark brown to brown, silty CLAY, plastic, stiff to soft, moist
6		0.0			
7		0.0			(76-82") Brown, silty CLAY/ clayey SILT, wet, soft, slightly plastic
8					(82-96") No Recovery
9	42	0.0 1846	(8-8.5)		(96-102") Brown, silty CLAY/ clayey SILT, wet, soft, slightly plastic (102-115") Yellowish brown clayey sandy SILT, wet, soft
10		767/OR 127	(9-9.5)		(115-138") Greyish brown, sandy SILT, wet, soft
11		0.0 0.0			
12		0.0			(138-144") No Recovery
					End of Boring at 12ft. 15:25 Collecting multi-soil sample, PD-20 (8.5-9.5) Checking PID/Headspace = 767/Overrange 15:50 DTW =7.89

AMAI 110 Corporate Park Drive White Plains, New York 10604	SOIL BORING LOG	BORING NUMBER PD - 21

PROJECT NAME:	Bristol - Myers Squibb	LOCATION:	Humacao, PR	START DATE:	3.07.05
PROJECT NO:	BM15.01.02	CONTRACTOR:	GeoEnviroTech	FINISH DATE:	3.07.05
SAMPLER TYPE/DIAMETER (IN):	Macro-core/ 2 inch	BORING METHOD:	Direct Push	DRILLER:	Juan, Abraham
TOTAL DEPTH DRILLED (FT):	12	DEPTH TO WATER (FT):		LOGGED BY:	Mike Stein

DEPTH FROM SURFACE (FEET)	RECOVERY (INCHES)	PID (ppm)	SAMPLE DESIGNATION	USCS CODE	LITHOLOGIC DESCRIPTION AND COMMENTS
1	42	0.0			(0-8") Asphalt
2		0.0			(8-20") Light green/dark brown, gravelly, sandy, silty CLAY / clayey SAND, angular and sub-angular lithic fragments, slightly moist
3		0.0			(20-38") silty SAND, slightly moist to moist soft to stiff, medium to coarse grained sand made of lithic fragments
4		0.0			(38-42") Olive green, clayey silty SAND / sandy CLAY , quartz fragments medium to coarse grained, sub-angular, some gravel fragments to (1") (42-48") No Recovery
5	12	0.0 764	(4-4.5)		(48-60") Clayey silty SAND/sandy silty CLAY, olive greeen and brown, soft medium to coarse grained sand. Sampler went down without much pressure
6					(60-96") No Recovery
7					
8					
9	48	0.0			(96-120") Sandy silty CLAY, slightly moist, soft some plasticity, very fine to fine grained sand with mica and pyrite fragments
10		0.0			
11		0.0			(120-144") Dark gray and reddish brown, SAND, medium to coarse grained and sub-angular lithic quartz, and mica fragments, wet
12		0.0			
					End of Boring at 12ft. 15:18 DTW = 7.79

AMAI 110 Corporate Park Drive White Plains, New York 10604	SOIL BORING LOG	BORING NUMBER PD - 22

PROJECT NAME:	Bristol - Myers Squibb	LOCATION:	Humacao, PR	START DATE:	3.07.05
PROJECT NO:	BM15.01.02	CONTRACTOR:	GeoEnviroTech	FINISH DATE:	3.07.05
SAMPLER TYPE/DIAMETER (IN):	Macro-core/ 2 inch	BORING METHOD:	Direct Push	DRILLER:	Juan, Abraham
TOTAL DEPTH DRILLED (FT):	12	DEPTH TO WATER (FT):		LOGGED BY:	Mike Stein

DEPTH FROM SURFACE (FEET)	RECOVERY (INCHES)	PID (ppm)	SAMPLE DESIGNATION	USCS CODE	LITHOLOGIC DESCRIPTION AND COMMENTS
1	40	0.0			(0-6") Asphalt
2		0.0			(6-18") Light olive green, Silty, sandy GRAVEL, angular lithic, gravel fragments slightly moist, some roots.
3		0.0			(18-40") Yellowish brown, greenish brown, sandy silty CLAY, some medium grained gravel fragments, slightly moist, stiff, roots
4		0.0			(40-48") No Recovery
5	26	0.0 0.0	(4-4.5)		(48-62") Olive green, gravelly, sandy, silty CLAY, slightly moist, stiff, angular lithic, quartz fragments
6		990 980			(62-74") Reddish brown/brownish red, gravelly, sandy, silty CLAY, stiff, slightly moist to moist, sub-angular sand / gravel fragments made of lithic fragments and pyrite
7		3268			(74-96") No Recovery
8					
9	40	1240 2760			(96-104") Sandy silty CLAY, same as above
10		6087 7697			(104-136") Light green, gray, dark red, SAND, loose, saturated, medium to coarse grained, quartz, mica, pyrite, lithic sand,
11		7423 448			
12		356			(136-144") No Recovery
					End of Boring at 12ft. 15:20 DTW = 7.47

AMAI 110 Corporate Park Drive White Plains, New York 10604	SOIL BORING LOG	BORING NUMBER PD - 23

PROJECT NAME:	Bristol - Myers Squibb	LOCATION:	Humacao, PR	START DATE:	3.09.05
PROJECT NO:	BM15.01.02	CONTRACTOR:	Geo EnviroTech	FINISH DATE:	3.09.05
SAMPLER TYPE/DIAMETER (IN):	Macro - core / 2inch	BORING METHOD:	Direct Push	DRILLER:	Juan, Abraham
TOTAL DEPTH DRILLED (FT):	12	DEPTH TO WATER (FT):		LOGGED BY:	Mike Stein

DEPTH FROM SURFACE (FEET)	RECOVERY (INCHES)	PID (ppm)	SAMPLE DESIGNATION	USCS CODE	LITHOLOGIC DESCRIPTION AND COMMENTS
1	36	0.0			(0-8") Asphalt and gravel, dry, tight
2		0.0			(8-14") Dark brown and orange-brown, sandy, clayey SILT, soft, slightly moist, some gravel fragments to 11/4"
3		0.0			(14-36") Dark grey / dark brown, sandy, silty CLAY, stiff, slightly moist, little gravel fragments to 1/2"
4					(36-48") No Recovery
5	46	0.0			(48-68") Greyish dark brown, silty CLAY, soft, moist, plastic
6		0.0 0.0	(5.5-6)		(68-76") Dark brown, silty CLAY, stiffer than above, moist, plastic
7		21 37			(76-94") Light brown / yellowish brown silty CLAY, stiff, moist, plastic, more silty
8		2295 8395			(94-96") No Recovery
9	48	1641 3695			(96-102") Dark brown silty CLAY, soft, moist, plastic
10		9783 5308	(9-9.5)		(102-120") Light brown / yellowish brown silty CLAY, soft, moist, plastic, grey mottles
11		2157 2065			(120-132") Same as Above, wet, more silty
12		767/OR 1927			(132-138") Light brown sandy SILT, wet, soft (138-144") Grey and pink silty SAND, wet, soft
					End of Boring at 12ft. 9:25 Collecting multi-soil sample, PD-23 (9-10) Checking PID / Headspace of sample = 767/Overrange 9:35 DTW =7.79, DTP = 7.75 Note: Background PID reading = 5.3

AMAI 110 Corporate Park Drive White Plains, New York 10604	SOIL BORING LOG	BORING NUMBER PD - 24

PROJECT NAME:	Bristol - Myers Squibb	LOCATION:	Humacao, PR	START DATE:	3.09.05
PROJECT NO:	BM15.01.02	CONTRACTOR:	Geo EnviroTech	FINISH DATE:	3.09.05
SAMPLER TYPE/DIAMETER (IN):	Macro - core / 2inch	BORING METHOD:	Direct Push	DRILLER:	Juan, Abraham
TOTAL DEPTH DRILLED (FT):	12	DEPTH TO WATER (FT):		LOGGED BY:	Mike Stein

DEPTH FROM SURFACE (FEET)	RECOVERY (INCHES)	PID (ppm)	SAMPLE DESIGNATION	USCS CODE	LITHOLOGIC DESCRIPTION AND COMMENTS
1	42	0.0			(0-14") Yellowish brown sandy SILT/ GRAVEL, soft, dry, loose, gravel to 1"
2		0.0			(14-24") Same as Above, color is greyish brown
3		0.0			(24-38") Dark brown, sandy, clayey SILT, stiff, slightly moist, little gravel
4		0.0 0.0			(38-42") Dark greyish brown clayey SILT /silty CLAY, soft, slightly moist (42-48") No Recovery
5	48	0.0 0.0	(4.5-5)		(48-60") Dark brown silty CLAY, soft, plastic, slightly moist
6		74 245			(60-96") Brown to yellowish brown with grey streaks, silty CLAY, soft to stiff, slightly moist to moist, semi-plastic, more silty at (84-96")
7		899 6582			
8		7862 6346			
9	48	5675 9312			(96-120") Yellowish brown, sandy, clayey SILT, moist, soft
10		9236 6826			
11		351 63			(120-144") Pinkish grey, silty SAND, wet, soft. Sand is fine grained
12		16 0.0			
					End of Boring at 12ft. Boring located at strip adjacent to asphalt parking lot. 9:38 DTW =7.32

AMAI 110 Corporate Park Drive White Plains, New York 10604	SOIL BORING LOG	BORING NUMBER PD - 25

PROJECT NAME:	Bristol - Myers Squibb	LOCATION:	Humacao, PR	START DATE:	3.09.05
PROJECT NO:	BM15.01.02	CONTRACTOR:	Geo EnviroTech	FINISH DATE:	3.09.05
SAMPLER TYPE/DIAMETER (IN):	Macro - core / 2inch	BORING METHOD:	Direct Push	DRILLER:	Juan, Abraham
TOTAL DEPTH DRILLED (FT):	12	DEPTH TO WATER (FT):		LOGGED BY:	Mike Stein

DEPTH FROM SURFACE (FEET)	RECOVERY (INCHES)	PID (ppm)	SAMPLE DESIGNATION	USCS CODE	LITHOLOGIC DESCRIPTION AND COMMENTS
1	48	0.0			(0-11") Asphalt and gravel, dry
2		0.0			(11-25") Light brown to greenish grey, sandy SILT, some gravel
3		0.0			(25-34") GRAVEL and crushed gravel (fill), sub-rounded to 11/4"
4		0.0			(34-48") Dark brown clayey SILT / silty CLAY, stiff, slightly moist.
5	48	0.0			(48-78") Dark brown silty CLAY, soft to stiff, plastic, moist
6		0.0			
7		0.0 0.0	(6.5-7)		(78-96") Light brown with grey streaks, silty CLAY, plastic, stiff, moist
8		95 1109			
9	44	0.0			(96-102") Dark brown silty CLAY, soft, moist, plastic (102-106") Brownish grey, sandy, clayey SILT, soft, loose, moist, little gravel
10		0.0			(106-132") Brownish grey, sandy, clayey SILT/ silty CLAY, wet, stiff
11		0.0			
12		0.0			(132-140") pinkish grey silty SAND (fine), wet, soft (140-144") No Recovery
					End of Boring at 12ft. 11:04 DTW =9.12

AMAI 110 Corporate Park Drive White Plains, New York 10604	SOIL BORING LOG	BORING NUMBER PD - 26

PROJECT NAME:	Bristol - Myers Squibb	LOCATION:	Humacao, PR	START DATE:	3.09.05
PROJECT NO:	BM15.01.02	CONTRACTOR:	Geo EnviroTech	FINISH DATE:	3.09.05
SAMPLER TYPE/DIAMETER (IN):	Macro - core / 2inch	BORING METHOD:	Direct Push	DRILLER:	Juan, Abraham
TOTAL DEPTH DRILLED (FT):	12	DEPTH TO WATER (FT):		LOGGED BY:	Mike Stein

DEPTH FROM SURFACE (FEET)	RECOVERY (INCHES)	PID (ppm)	SAMPLE DESIGNATION	USCS CODE	LITHOLOGIC DESCRIPTION AND COMMENTS
1	48	0.0			(0-9") Asphalt and gravel, dry
2		0.0			(9-24") Light brown to dark greyish brown, clayey, sandy SILT, slightly moist, loose, soft
3		0.0			(24-30") GRAVEL / clayey SILT, dark greyish brown, stiff, slightly moist
4		0.0 31			(30-48") Dark greyish brown clayey SILT, stiff, slightly moist
5	48	0.0			(48-62") Dark greyish brown clayey SILT,silty CLAY, soft, moiist
6		0.0			(62-96") Dark brown silty CLAY, soft, plastic, moist
7		0.0 0.0	(6.5-7)		
8		31 138			
9	45	0.0 80			(96-108") Dark brown, silty CLAY, soft, plastic, moist
10		5569 9943			(108-110") dark brown, sandy, clayey SILT, loose, slightly moist little gravel (110-114") Dark brown silty CLAY, soft, moist, plastic (114-116") Dark brown silty SAND, wet, soft, fine grained (116-118") Dark brown silty CLAY, soft, moist, plastic
11		5948 106			(118-141") Brownish gray, silty SAND, fine to medium grained, saturated, soft,
12		21 53			(141-144") No Recovery
					End of Boring at 12ft. 13:22 DTW =7.46

AMAI 110 Corporate Park Drive White Plains, New York 10604	SOIL BORING LOG	BORING NUMBER PD - 27

PROJECT NAME:	Bristol - Myers Squibb	LOCATION:	Humacao, PR	START DATE:	3.09.05
PROJECT NO:	BM15.01.02	CONTRACTOR:	Geo EnviroTech	FINISH DATE:	3.09.05
SAMPLER TYPE/DIAMETER (IN):	Macro - core / 2inch	BORING METHOD:	Direct Push	DRILLER:	Juan, Abraham
TOTAL DEPTH DRILLED (FT):	12	DEPTH TO WATER (FT):		LOGGED BY:	Mike Stein

DEPTH FROM SURFACE (FEET)	RECOVERY (INCHES)	PID (ppm)	SAMPLE DESIGNATION	USCS CODE	LITHOLOGIC DESCRIPTION AND COMMENTS
1	40	0.0			(0-10") Asphalt and gravel, dry
2		0.0			(10-28") Light brown to dark grey, sandy SILT, soft, loose, slightly moist
3		0.0 21			(28-40") Dark brown, clayey SILT, stiff, slightly moist
4		21			(40-48") No Recovery
5	48	0.0			(48-50") Dark brown clayey SILT, stiff, slightly moist (50-54") Dark brown, sandy SILT, loose, soft, slightly moist
6		0.0 26			(54-96") Dark brown silty CLAY, soft to stiff, moist
7		0.0 31	(6-6.5)		
8		42 106			
9	48	21 5892			(96-103") Dark brown silty CLAY, soft to stiff, moist
10		2140 9467			(103-136") Light brown to grey, sandy, silty CLAY, plastic, moist, stiff
11		9312 8492			
12		4959 5463			(136-144") Grey to pinkish grey SAND (fine to coarse), wet, soft
					End of Boring at 12ft. 13:24 DTW =8.08

AMAI 110 Corporate Park Drive White Plains, New York 10604	SOIL BORING LOG	BORING NUMBER PD - 28

PROJECT NAME:	Bristol - Myers Squibb	LOCATION:	Humacao, PR	START DATE:	3.09.05
PROJECT NO:	BM15.01.02	CONTRACTOR:	Geo EnviroTech	FINISH DATE:	3.09.05
SAMPLER TYPE/DIAMETER (IN):	Macro - core / 2inch	BORING METHOD:	Direct Push	DRILLER:	Juan, Abraham
TOTAL DEPTH DRILLED (FT):	12	DEPTH TO WATER (FT):		LOGGED BY:	Mike Stein

DEPTH FROM SURFACE (FEET)	RECOVERY (INCHES)	PID (ppm)	SAMPLE DESIGNATION	USCS CODE	LITHOLOGIC DESCRIPTION AND COMMENTS
1	48	0.0			(0-10") Asphalt and gravel, dry
2		0.0			(10-38") Light brown to greyish brown sandy SILT, some gravel to 1/2", slightly moist, soft
3		0.0			
4		0.0			(38-48") Greyish brown to dark brown clayey SILT, stiff, slightly moist, little gravel
5	42	0.0			(48-90") Dark brown silty CLAY, soft, moist
6		0.0			
7		0.0			
8		10			(90-96") No Recovery
9	48	0.0 21	(8-8.5)		(96-102") Dark brown silty CLAY, soft, moist (102-106") Greyish brown, sandy, clayey SILT, soft, loose, moist
10		9390 3505			(106-112") Light brown silty CLAY, soft, moist
11		1144 4099			(112-136") Light brown to pinkish grey silty SAND (fine to medium), wet, soft (less silty at 124-136")
12		4358			(136-144") No Recovery
					End of Boring at 12ft. 13:26 DTW =7.99

Predesign Soil Investigation Report

Addendum

Clean Depth Soil Sample Results
Cell 2, 4, 15, and 16

Soil Sampling Results
Predesign Soil Investigation
Bristol-Myers Squibb Manufacturing Company
Humacao, Puerto Rico

Sample ID	Tier 1	Tier 2	PD-2	PD-2D	PD-4	PD-15	PD-16
Sample Depth	Limit	Limit	3.5-4	3.5-4	5.5-6	3.5-4	3.5-4
Sample Date			13-Jan-07	13-Jan-07	13-Jan-07	2-Feb-07	2-Feb-07
Reporting units are in ug/kg							
MIBK	330,000	19,000	ND	17.9	ND	ND	ND
Ethylbenzene	100,000	13,000	8,280	10,400	ND	928	ND
Total Xylene	300,000	190,000	96 J	5.3	ND	ND	ND
Any values exceeding Tier 1 or Tier 2 standards are shown shaded.							

ND - not detected
Note - Results are for soil samples collected on January 13, 2006 and February 2, 2006 at shallower intervals to determine depth of clean material.

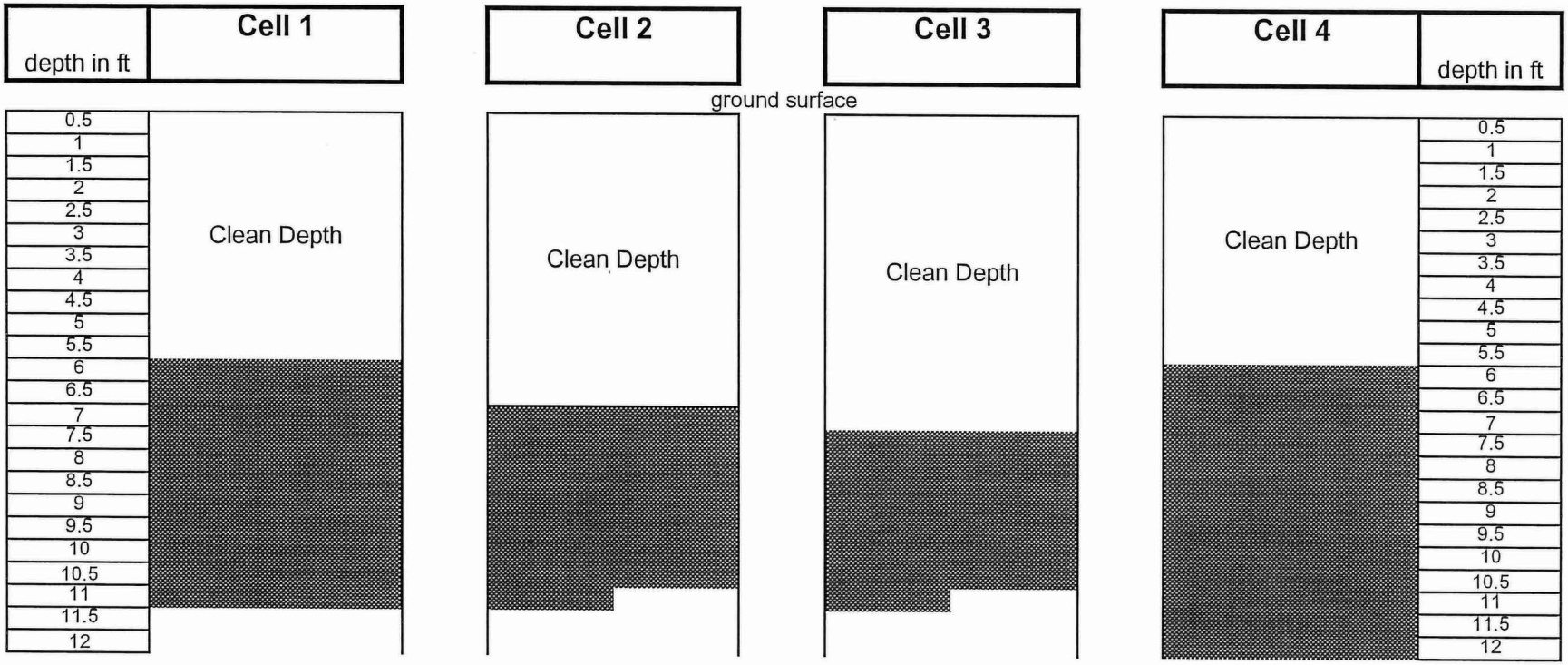
Appendix C
Soil Excavation Documentation

Soil Excav[illegible]n Summary
Area A

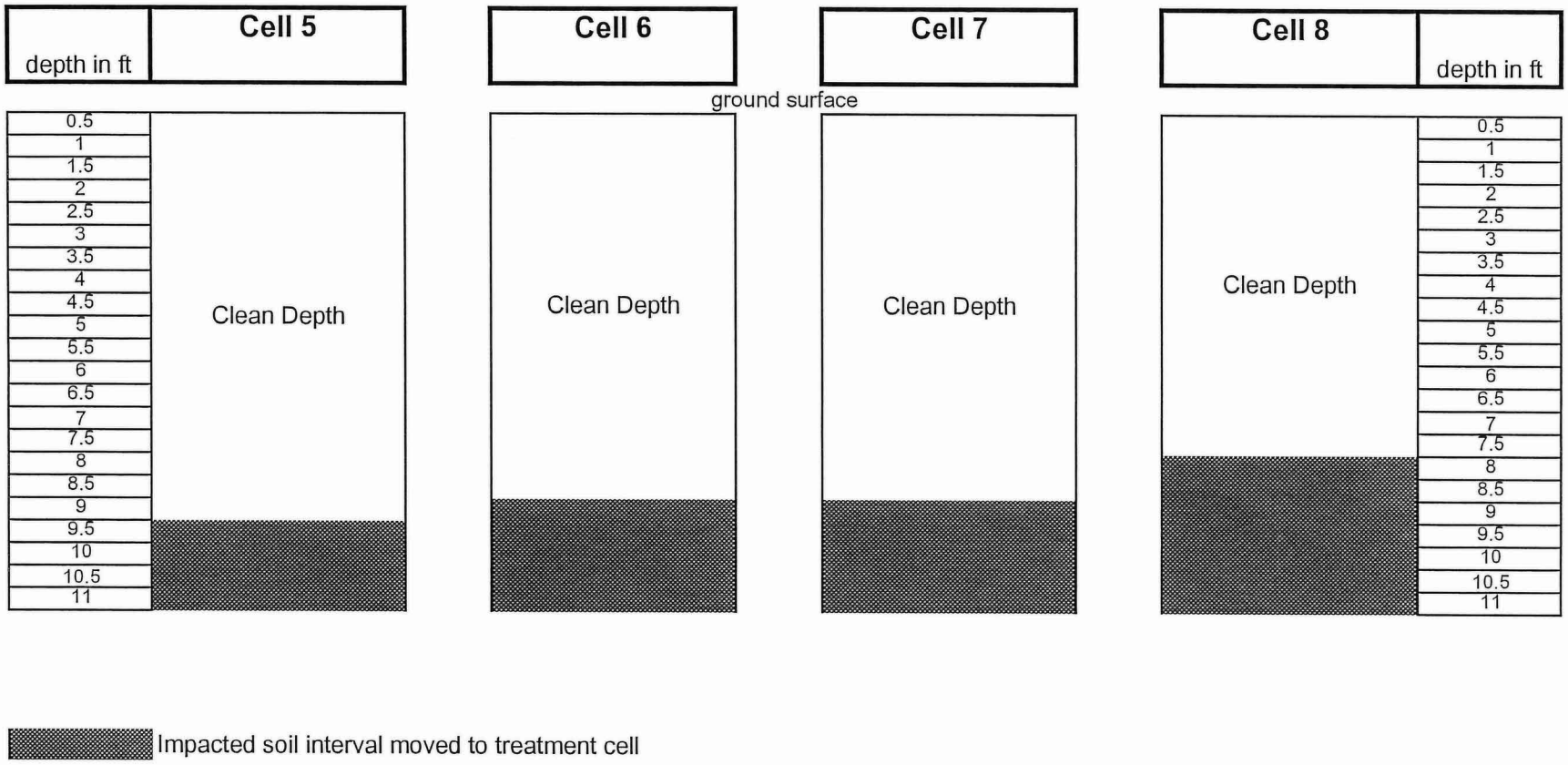
Cell Number	Depth of clean soil (ft bgs)	Volume of clean soil (cy)	Cumulative volume (cy)	Depth of Impacted soil (ft bgs)	Approximate Volume of Impacted soil (cy)
1	5.5	104	104	11	114
2	6	114	218	10.75	88
3	7	135	353	11	83
4	5.5	104	456	12	135
5	9	176	633	11	41
6	8.5	166	799	11	52
7	8.5	166	964	11	52
8	7	135	1099	11	72
10	6.5	124	1224	10.25	73
11	7	135	1359	10.5	62
12	8.5	166	1524	11	52
14	6.5	124	1649	11	93
15	4	73	1721	11	145
16	5	93	1815	11	122
17	9.5	187	2001	11	31
18	8.5	166	2167	11	52
19	8.5	166	2333	12	72
22	5.5	104	2437	12.5	145
23	6	114	2551	12.5	135
24	5	93	2644	11.5	135
30	4.5	41	2686	13	94

Note: Calculation of the volume of clean soil excludes 0.5 ft of asphalt cover.

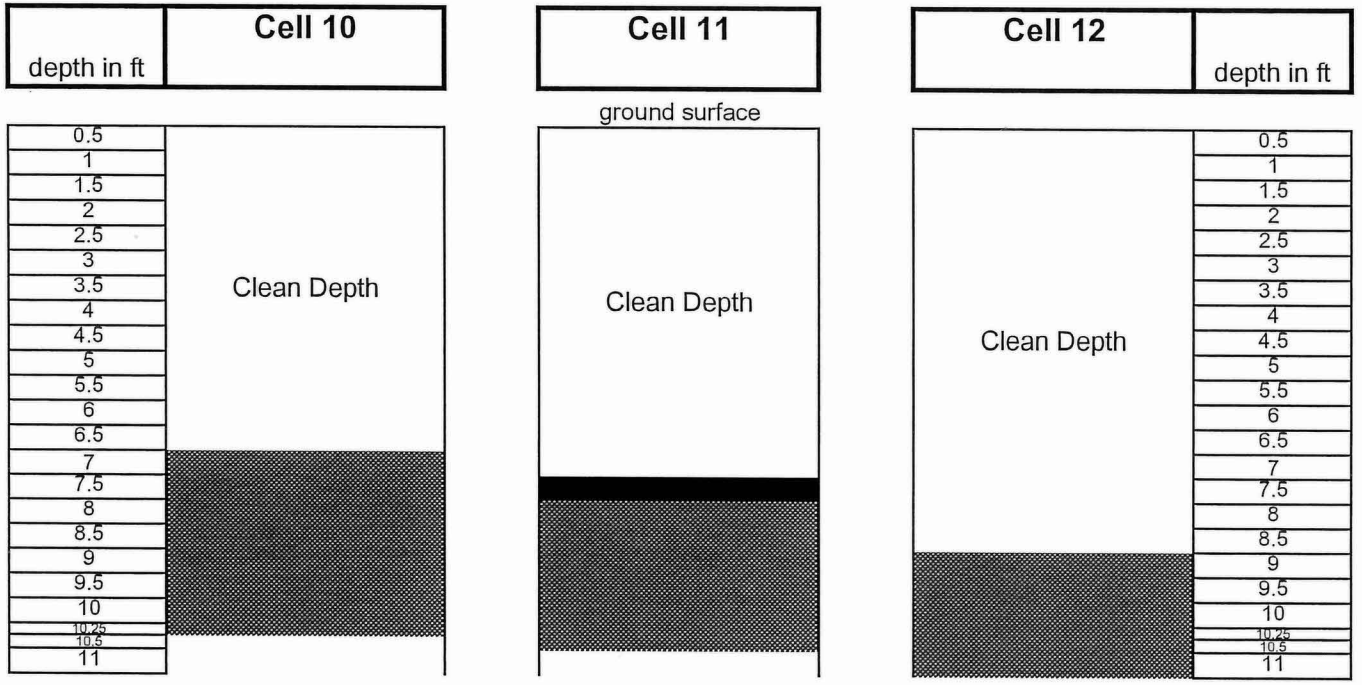
Cell Excavation Depths



Cell Excavation Depths



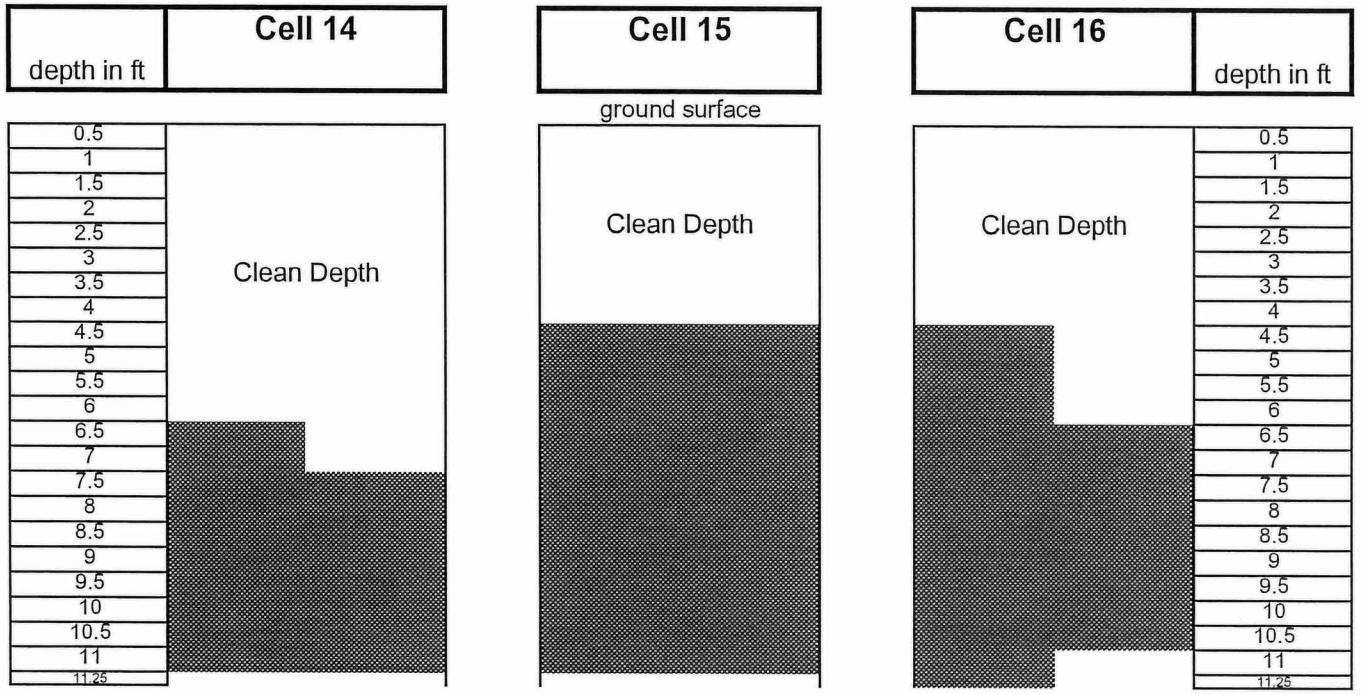
Cell Excavation Depths



Soil between Tier 1 and Tier 2 values removed to landfill

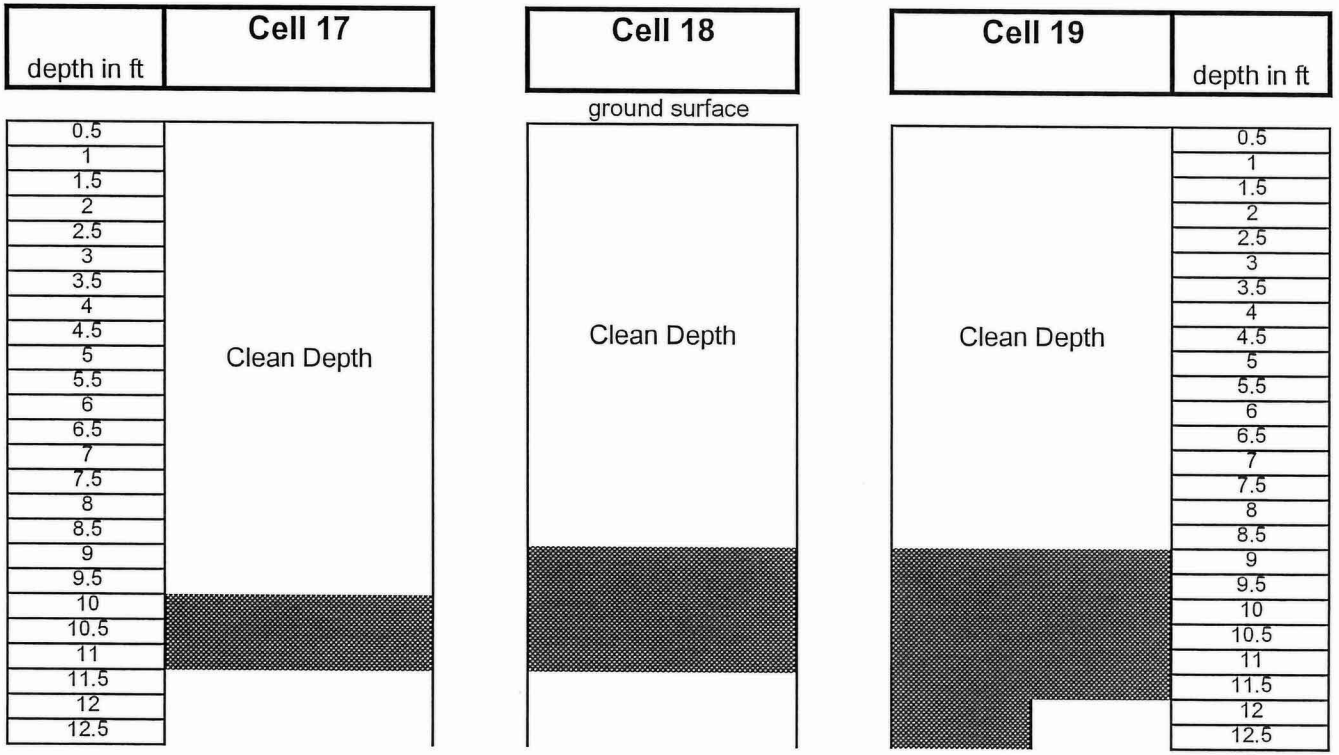
Impacted soil moved to treatment cell

Cell Excavation Depths



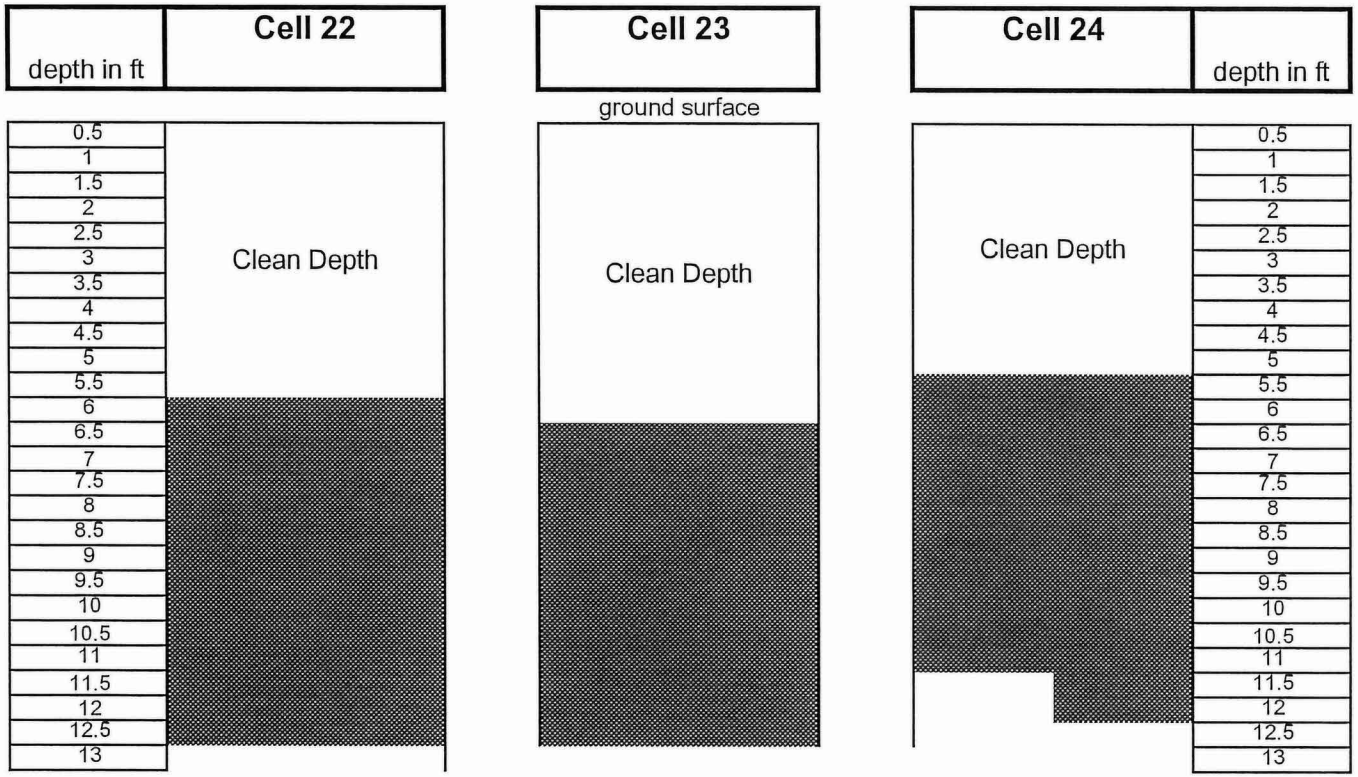
Impacted soil moved to treatment cell

Cell Excavation Depths



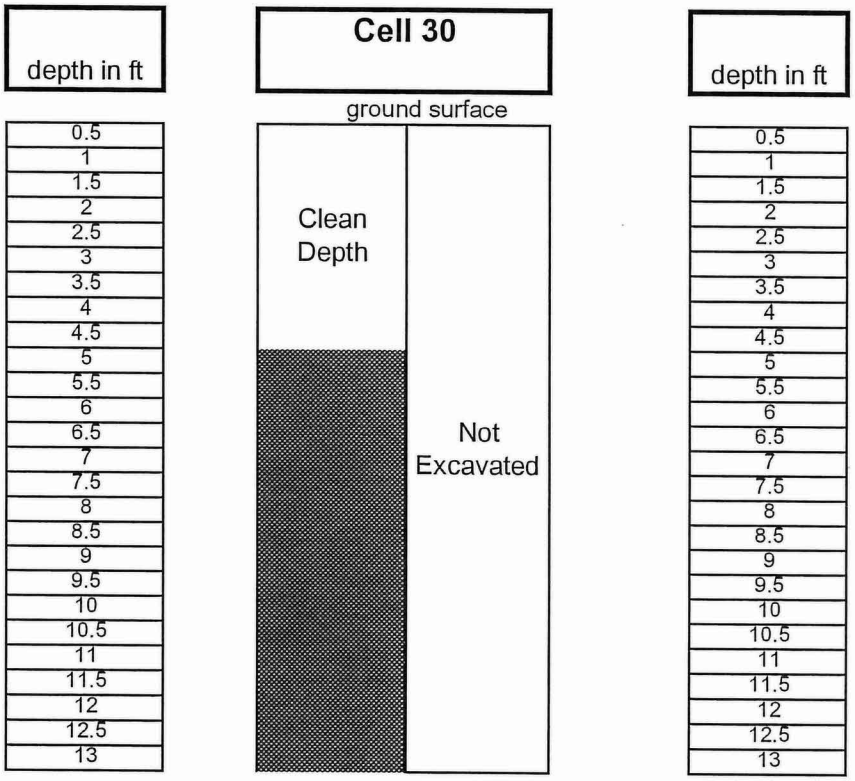
Impacted soil moved to treatment cell

Cell Excavation Depths



Impacted soil moved to treatment cell

Cell Excavation Depths



Appendix D
Biopile Drawings

LEGEND:

- CENTER LINE
- CHAIN LINK FENCE
- STORM SEWER LINE
- UNDERGROUND ELECTRICAL CONDUIT
- CONTOUR LINE
- STA–2 BASE LINE STATION
- MANHOLE
- C.O. CLEAN–OUT
- PIV POST INDICATOR VALVE
- CATCH BASIN
- 20.00 SPOT ELEVATION
- MONITORING WELL
- ORNAMENTAL POLE / LUMINARY
- PALM
- TREE
- CONCRETE SLAB
- BUILDING AREA
- ALUMINUM STRUCTURE

NOTES

1– ALL DISTANCES AND ELEVATIONS ARE IN FEET.

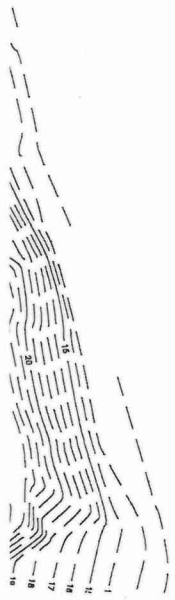
2– BENCHMARK ELEVATION ON TOP OF SURVEY PK–NAIL/WASHER LOCATED AT EAST SIDE OF BUILDING NO.18, ON TOP OF CONCRETE SWALE. ELEVATION 18.071 FEET.

3– HORIZONTAL AND VERTICAL CONTROL REFERRED TO BRISTOL–MYERS SQUIBB PLANT SYSTEM.

4– THE TOPOGRAPHIC WAS SHOWN IN SPOT ELEVATION AND CONTOUR LINE WITH INTERVAL AT 1.00 FOOT.

5– ALL DRAWING AND CALCULATION FOR THIS MAP WERE DONE USING AUTOCAD FOR WINDOWS RELEASE 2004 AND SURVCADD FOR WINDOWS RELEASE 2004.

CONTRACTORS PARKING LOT



0 40 80
SCALE IN FEET

Issued for: REVIEW-WIP

Anderson Mulholland & Associates
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Approved by

Customer Representative	mm/dd/yy
Drafter	mm/dd/yy
Project Manager	mm/dd/yy
Engineering Manager	mm/dd/yy
Quality Assurance	mm/dd/yy

rev	date	description	by
REV. A	10/10/2006	FOR BMS REVIEW	

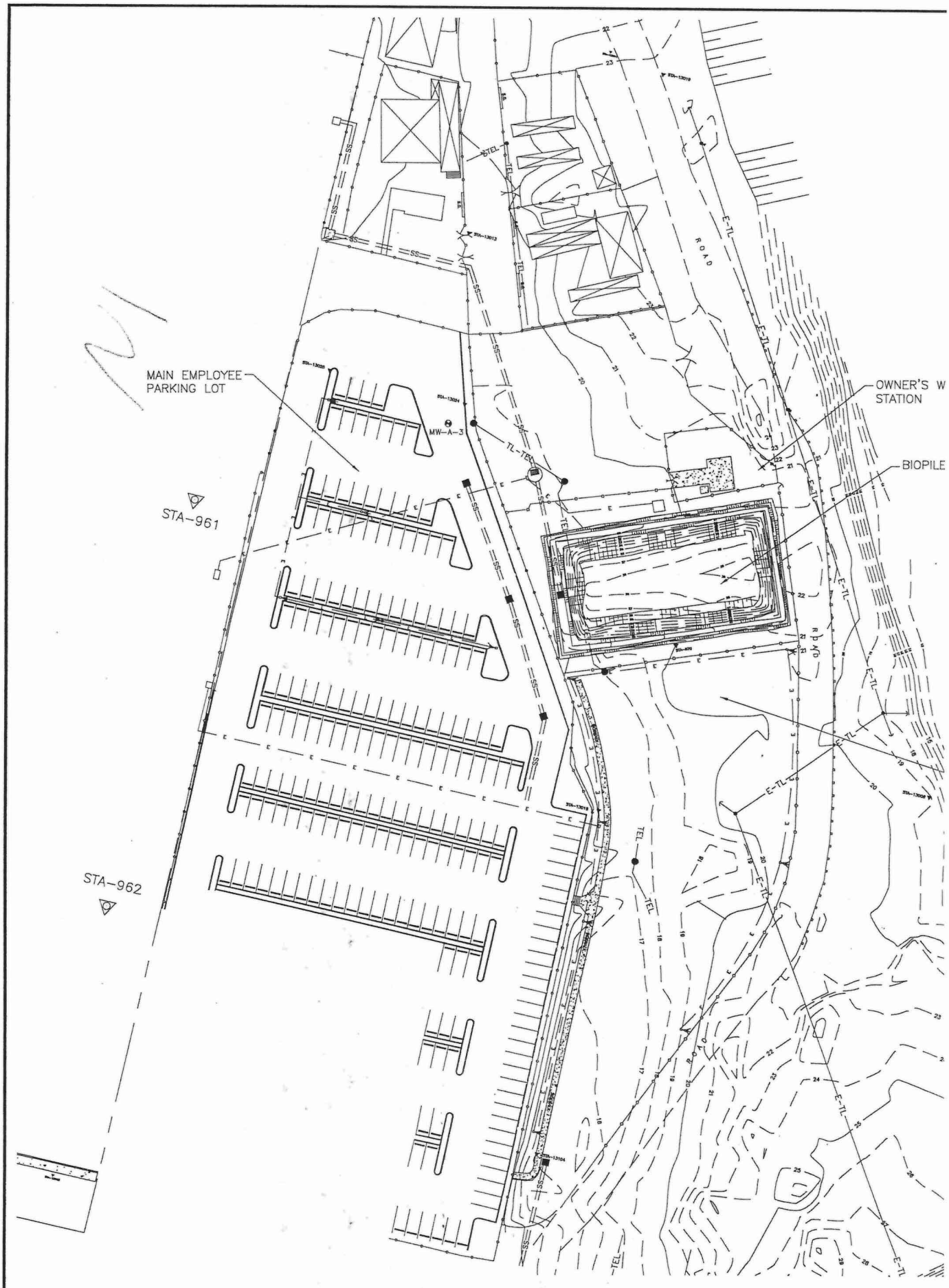
Global Engineering
Bristol–Myers Squibb Company

title: PROJECT AREA PLAN

project: ICM BUILDING 5 AREA PROJECT
AREA B AND BIOPILE

location: HUMACAO
PUERTO RICO

CAR NUMBER: NONE (EXPENSE)	SHEET #: G-102
DATE: 10/10/06	
SCALE: NONE	
PRJ MGR: D.LINDSTRAND	CAD FILE NAME
DESIGNER: D INITIALS	G-102.dwg
VENDOR NAME:	
VENDOR PROJECT NUMBER:	
AUTHOR:	
DISCIPLINE:	
SYSTEM:	
SYSTEM #:	
EQUIPMENT:	
CSI CATEGORY	
OBJECT NAME	
DOCUMENT TYPE	
DRAWING MACRO	
DOCUMENT STATUS	
DEPARTMENT	SHEET: 0 of 0



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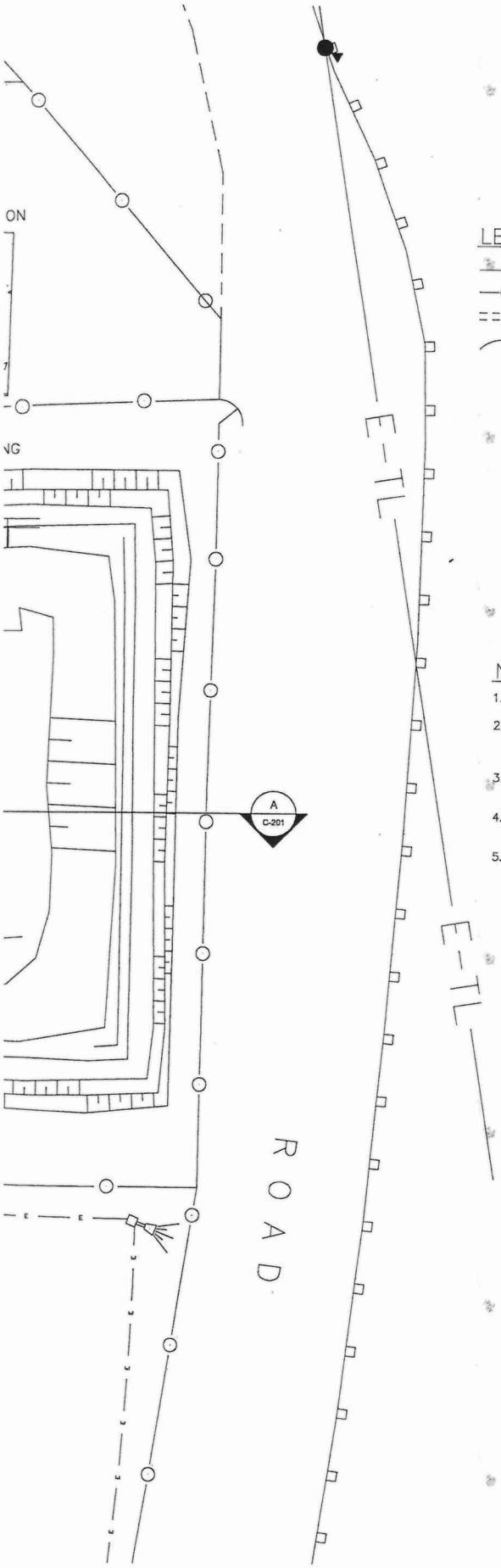

LEGEND:

- CENTER LINE
- CHAIN LINK FENCE
- STORM SEWER LINE
- 50.00 CONTOUR LINE
- STA-2 BASE LINE STATION
- MANHOLE
- C.O. CLEAN-OUT
- PIV POST INDICATOR VALVE
- CATCH BASIN
- 20.00 SPOT ELEVATION
- ORNAMENTAL POLE / LUMINARY
- PALM
- TREE
- CONCRETE SLAB
- BUILDING AREA
- ALUMINUM STRUCTURE

NOTES

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4. THE TOPOGRAPHIC WAS SHOWN IN SPOT ELEVATION AND CONTOUR LINE WITH INTERVAL AT 1.00 FOOT.
5. ALL DRAWING AND CALCULATION FOR THIS MAP WERE DONE USING AUTOCAD FOR WINDOWS RELEASE 2004 AND SURVCADD FOR WINDOWS RELEASE 2004.

0 10 20
SCALE IN FEET

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Approved by

Customer Representative	mm/dd/yy
Drafter	mm/dd/yy
Project Manager	mm/dd/yy
Engineering Manager	mm/dd/yy
Quality Assurance	mm/dd/yy

rev	date	description	by
REV. A	10/18/2006	FOR BMS REVIEW	

Global Engineering

Bristol-Myers Squibb Company

title: EXISTING BIOPILE PLAN

project: ICM BUILDING 5 AREA PROJECT AREA B AND BIOPILE

location: HUMACAO PUERTO RICO

CAR NUMBER: NONE (EXPENSE)	SHEET #: C-101
DATE: 10/10/06	
SCALE: NONE	
PRJ MGR: D.LINDSTRAND	CAD FILE NAME
DESIGNER: D INITIALS	C-101.dwg
VENDOR NAME:	
VENDOR PROJECT NUMBER:	
AUTHOR:	
DISCIPLINE:	
SYSTEM:	
SYSTEM #:	
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CSI CATEGORY	
OBJECT NAME	
DOCUMENT TYPE	
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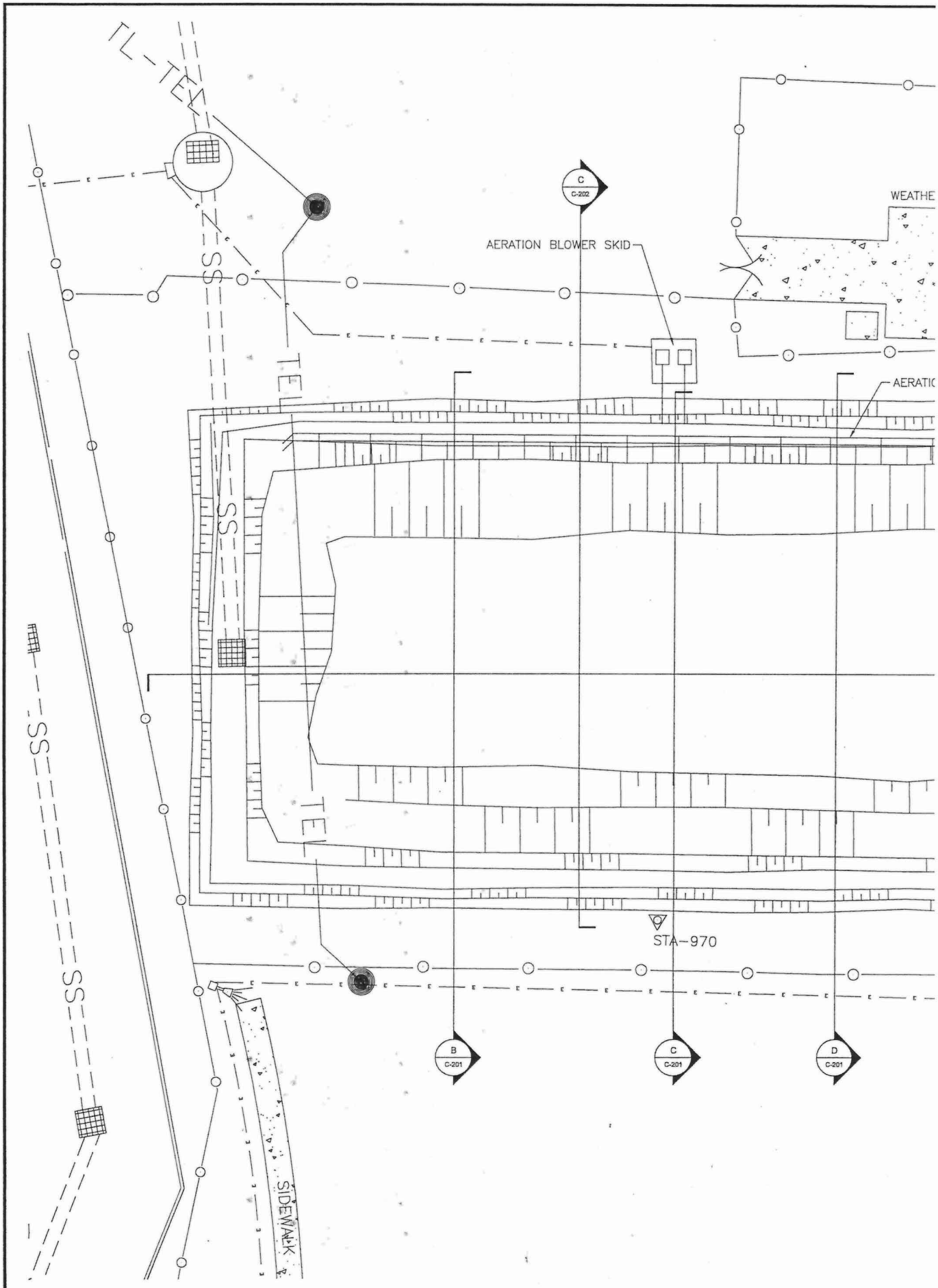
DEPARTMENT	SHEET 8 of 8



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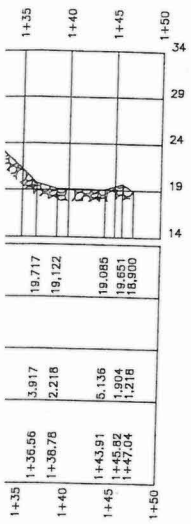

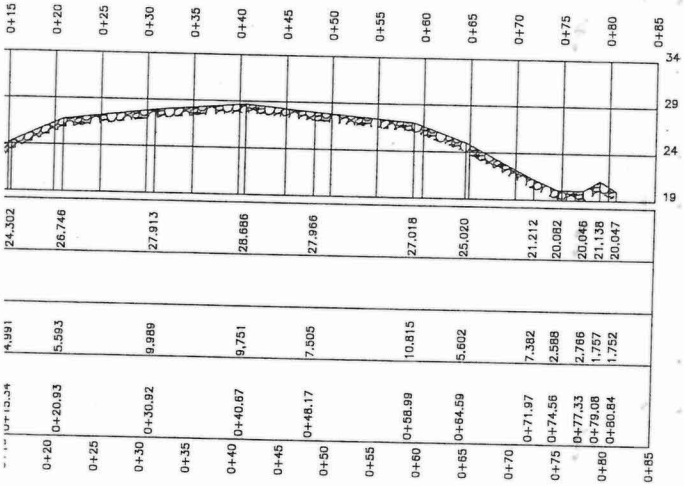

PROFILE C C-101

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Approved by

Customer Representative	mm/dd/yy
Drafter	mm/dd/yy
Project Manager	mm/dd/yy
Engineering Manager	mm/dd/yy
Quality Assurance	mm/dd/yy

rev	date	description	by
REV. A	10/18/2006	FOR BMS REVIEW	

Global Engineering
Bristol-Myers Squibb Company

title: EXISTING BIOPILE SOIL PROFILES

project: ICM BUILDING 5 AREA PROJECT AREA B AND BIOPILE

location: HUMACAO PUERTO RICO

CAR NUMBER: NONE (EXPENSE)	SHEET #: C-201
DATE: 10/18/06	
SCALE: NONE	
PRJ MGR: D.LINDSTRAND	CAD FILE NAME
DESIGNER: D INITIALS	C-201.dwg
VENDOR NAME:	
VENDOR PROJECT NUMBER:	
AUTHOR:	
DISCIPLINE:	
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SYSTEM #:	
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CSI CATEGORY	
OBJECT NAME	
DOCUMENT TYPE	
DRAWING MACRO	
DOCUMENT STATUS	

Issued for: REVIEW-WIP

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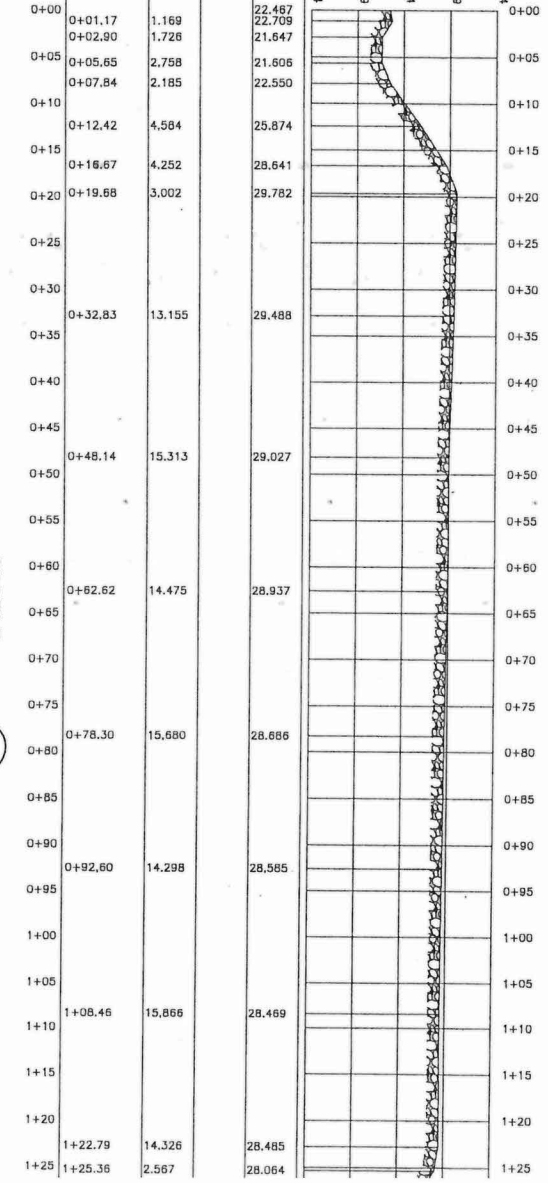
PROFILE A C-101

STATIONS	PARTIALS	INVERT	GROUND
0+00			22.467
0+01.17	1.169		22.709
0+02.90	1.726		21.647
0+05			
0+05.65	2.758		21.606
0+07.84	2.185		22.550
0+10			
0+12.42	4.584		25.874
0+15			
0+16.67	4.252		28.641
0+19.68	3.002		29.782
0+20			
0+25			
0+30			
0+32.83	13.155		29.488
0+35			
0+40			
0+45			
0+48.14	15.313		29.027
0+50			
0+55			
0+60			
0+62.62	14.475		28.937
0+65			
0+70			
0+75			
0+78.30	15.680		28.686
0+80			
0+85			
0+90			
0+92.60	14.298		28.585
0+95			
1+00			
1+05			
1+08.46	15.866		28.469
1+10			
1+15			
1+20			
1+22.79	14.326		28.485
1+25.36	2.567		28.064



PROFILE B C-101

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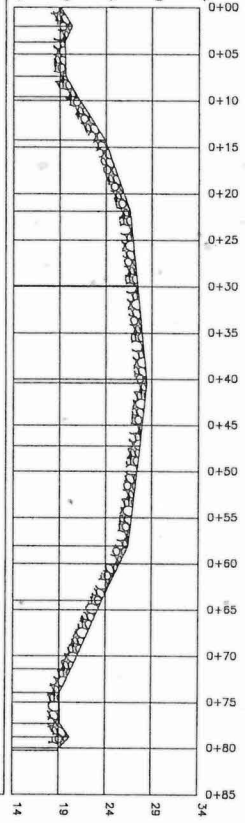
0+02.01	2.013		20.333
0+03.74	1.725		19.560
0+05			
0+07.41	3.666		19.634
0+09.58	2.173		20.921
0+10			
0+14.24	4.661		23.910
0+15			
0+20			
0+21.87	7.630		26.637
0+25			
0+29.89	8.016		27.454
0+30			
0+35			
0+40.41	10.523		28.469
0+45			
0+47.25	6.845		27.736
0+50			
0+55			
0+58.07	10.814		26.453
0+60			
0+63.98	5.927		23.607
0+65			
0+70			
0+71.42	7.427		20.309
0+73.96	2.543		19.102
0+75			
0+77.33	3.371		19.145
0+78.84	1.502		20.189
0+80.28	1.439		18.840
0+80			
0+85			



PROFILE D C-101

STATIONS	PARTIALS	INVERT	GROUND
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0+02.55	2.553		21.422
0+04.34	1.787		20.639
0+05			
0+07.42	3.079		20.573
0+10			
0+10.13	2.710		21.822
0+15			
0+15.39	5.257		25.328
0+20			
0+21.14	5.754		27.514
0+25			
0+30			
0+31.15	10.006		28.347
0+35			
0+40			
0+40.42	9.273		29.027
0+45			
0+48.53	8.112		28.569
0+50			
0+55			
0+59.37	10.842		28.043
0+60			
0+64.76	5.389		27.129
0+65			
0+70			
0+72.12	7.357		21.999
0+74.23	2.107		21.017
0+75			
0+77.40	3.170		21.015
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0+80			
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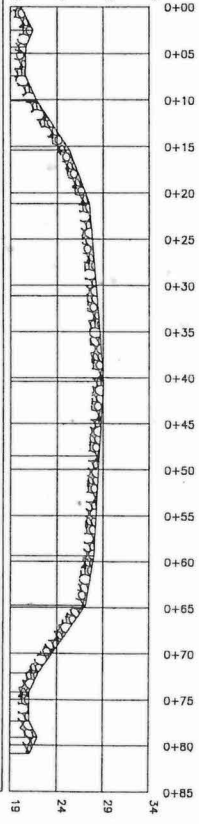

STATIONS	PARTIALS	INVERT	GROUND
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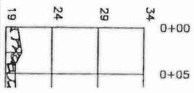
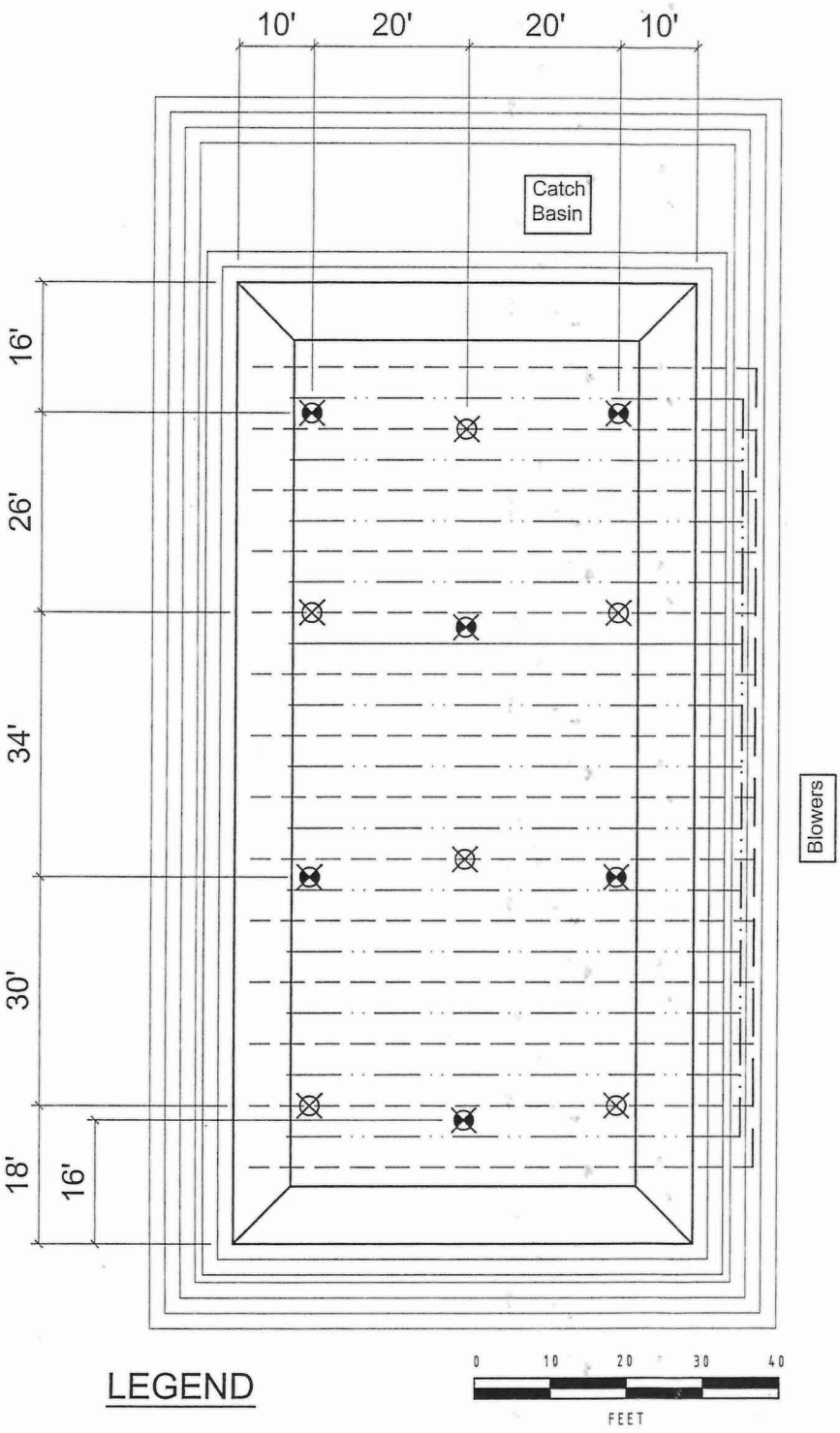
0+02.72	2.721		20.791
0+04.01	1.284		20.096
0+05			





LEGEND

- Lower aeration pipes
- Upper aeration pipes
- Gas sample probe 4 feet below top of pile.
- Gas sample probe 7 feet below top of pile. Must be minimum 1 feet above bottom of contaminated material.

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Approved by

Customer Representative	mm/dd/yy
Drafter	mm/dd/yy
Project Manager	mm/dd/yy
Engineering Manager	mm/dd/yy
Quality Assurance	mm/dd/yy

1	DATE	REVISION	BY
Rev.A	date	description	by

Global Engineering
Bristol-Myers Squibb Company

title: Bipole Gas Sampling Probes

project: ICM BUILDING 5 AREA PROJECT
AREA B AND BIOPILE

location: HUMACAO
PUERTO RICO

CAR NUMBER: NONE (EXPENSE)	SHEET #: H202
DATE: 10/10/06	
SCALE: NONE	
PRJ MGR: D.LINDSTRAND	CAD FILE NAME
DESIGNER: D INITIALS	
VENDOR NAME:	
VENDOR PROJECT NUMBER:	
AUTHOR:	
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SYSTEM:	
SYSTEM #:	
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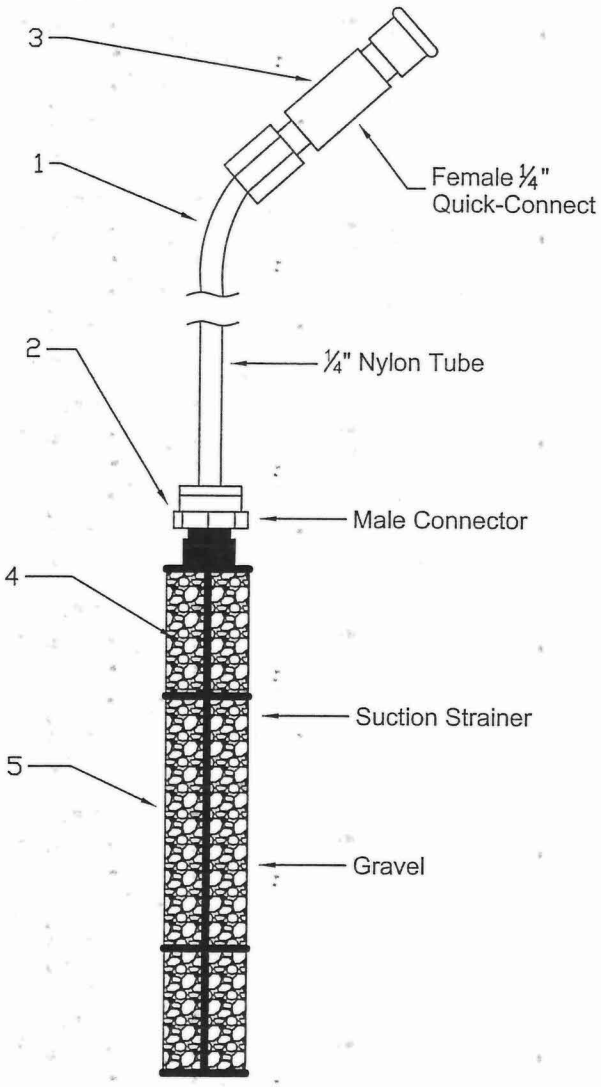
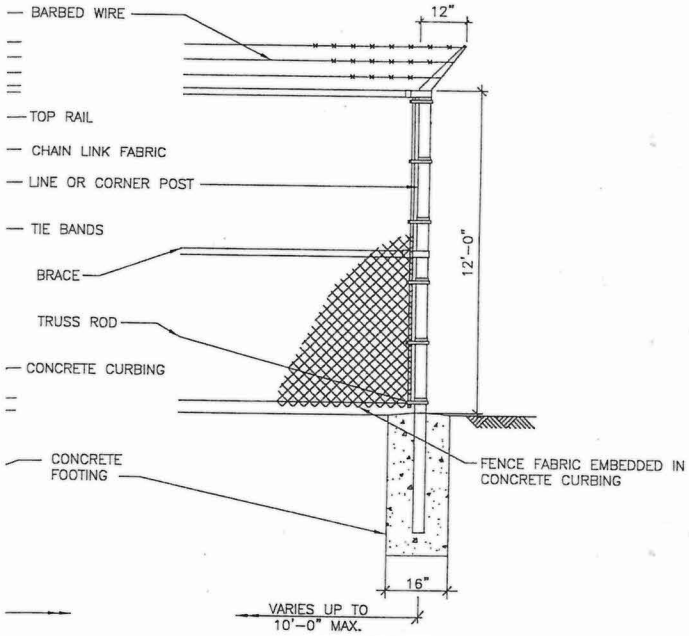
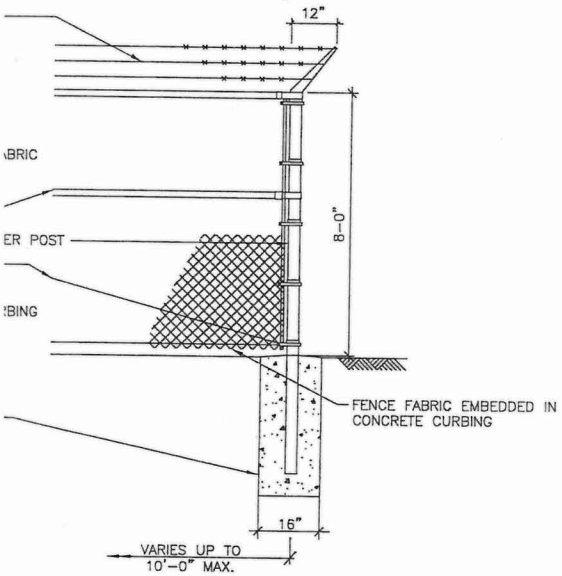


Gas Monitoring Probe Part List			
Item	**Part**	**Quantity**	**Characteristics**
1	1/4" nylon tubing	650 ft	High flexibility and strength, resistant to crushing, handles alkalis, oils, solvents. Resistant to high vacuum pressure.
2	1/4" tube fitting with NPT 3/4" male connection hose	20	Nylon
3	1/4" quick-connector with connection for 1/4" nylon tubing	20	Nylon or Brass
4	Pea gravel for strainer		
5	Suction strainer 1-2" diameter and 6-9" length with NPT 3/4" female connection hose	20	Grainger 2P052 or similar. Nylon construction.
6 (not shown)	Quick-connect protectors	20	



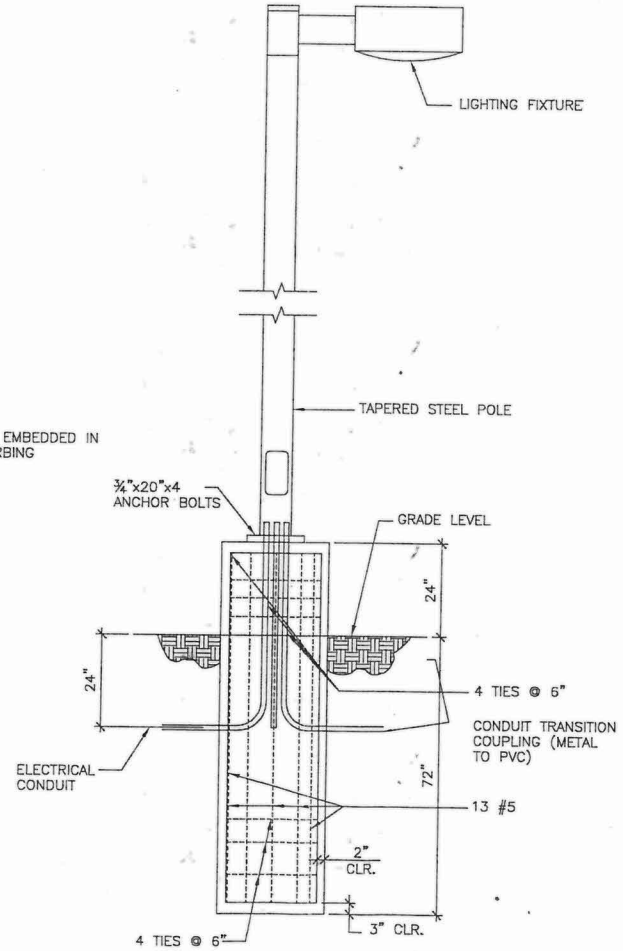
END POST DETAIL

RED SECURITY
DETAIL
B
H-101

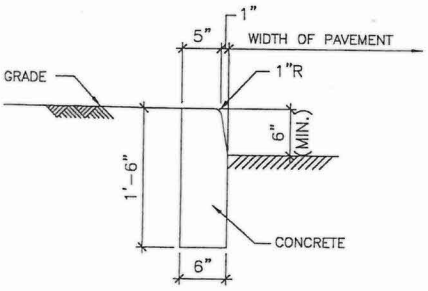


END POST DETAIL

C
H-101



RESTORED LIGHT POLE DETAIL
SCALE: NTS
1
E-001



RESTORED CONCRETE CURB DETAIL
SCALE: NTS
F
H-101

Issued for: REVIEW-WIP

Anderson Mulholland & Associates
ENVIRONMENTAL CONSULTANTS

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Approved by

Customer Representative	mm/dd/yy
Drafter	mm/dd/yy
Project Manager	mm/dd/yy
Engineering Manager	mm/dd/yy
Quality Assurance	mm/dd/yy

rev	date	description	by
REV.A	10/19/2006	FOR BMS REVIEW	

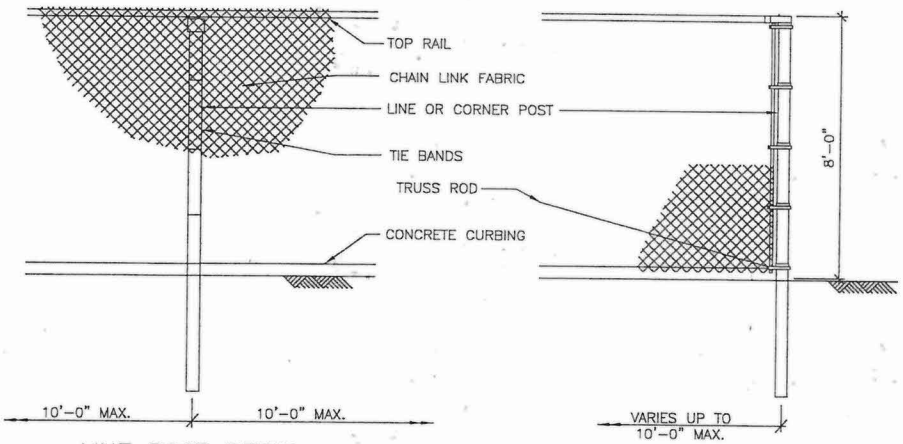
Global Engineering
Bristol-Myers Squibb Company

title: AREA B RESTORATION DETAILS

project: ICM BUILDING 5 AREA PROJECT
AREA B AND BIOPILE

location: HUMACAO
PUERTO RICO

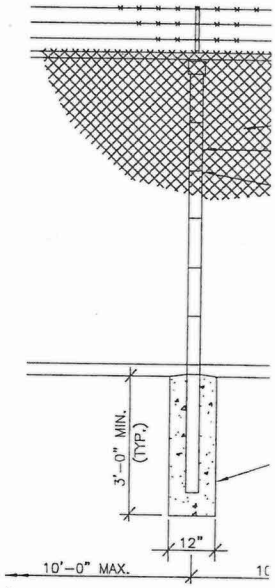
CAR NUMBER: NONE (EXPENSE)	SHEET #: H-501
DATE: 10/19/06	
SCALE: NONE	
PRJ MGR: D.LINDSTRAND	CAD FILE NAME
DESIGNER: D INITIALS	H-501.dwg
VENDOR NAME:	
VENDOR PROJECT NUMBER:	
AUTHOR:	
DISCIPLINE:	
SYSTEM:	
SYSTEM #:	
EQUIPMENT:	
CSI CATEGORY	
OBJECT NAME	
DOCUMENT TYPE	
DRAWING MACRO	
DOCUMENT STATUS	
DEPARTMENT	SHEET # of #



LINE POST DETAIL

END POST DETAIL

TEMPORARY CONSTRUCTION FENCE DETAIL
SCALE: NTS
A H-101



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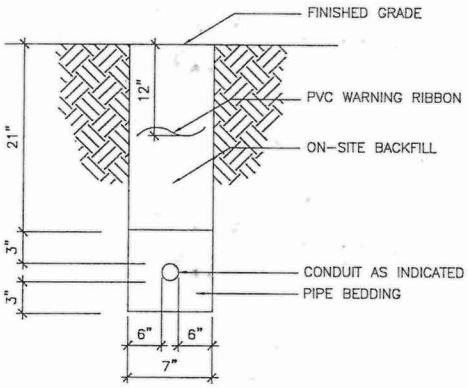
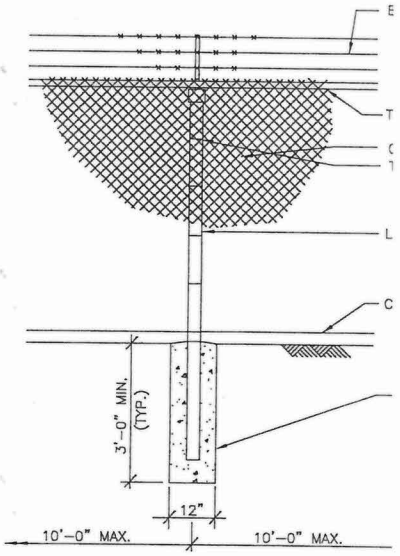
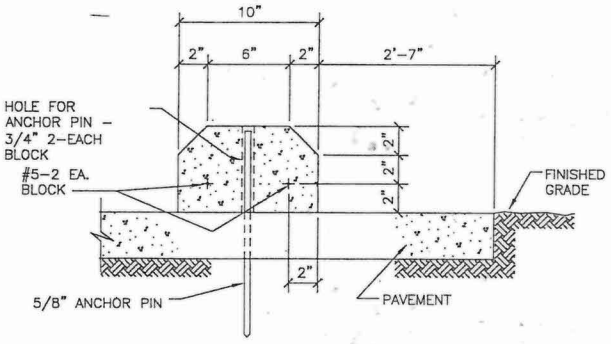


RESTORED CONDUIT TRENCH DETAIL
SCALE: NTS
2 E-001

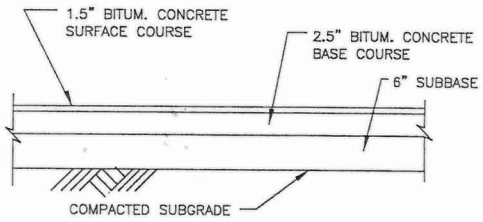


LINE POST DETAIL

RESTORE
FENCE D
SCALE: NTS



RESTORED PRECAST WHEEL STOP DETAIL
SCALE: NTS
D H-101



RESTORED ASPHALT PAVEMENT DETAIL
SCALE: NTS
E H-101

\DD Masters\Anderson Mulholland & Ass... dwg, 10/25/2006 10:54:48 AM, \\snycs01\snyc\pd029